NECEDAH NWR
NARRATIVE REPORT 1967

Necedah National Wildlife Refuge

Necedah, Wisconsin

PERSONNEL*

Edward J. Collins - - - to 10/5/67 - - - - Refuge Manager
David J. Brown - - - from 10/23/67 - - - Refuge Manager
Howard A. Lipke - - - - - - - - - - - - - - - Ass't Refuge Manager
James C. Gritman - - - to 9/1/67 - - - - - Forester
James R. Lennartson - EOD 6/19/67 - - - - Forester
Vern E. Rudolph - - - - - - - - - - - - - - - Clerk
Harold R. Carter - - - - - - - - - - - - - - Maintenanceman
Robert W. Arrowsmith - - - - - - - - - - - - Mechanic

TEMPORARY

William L. Renaker - - Mar. to Sept. - - - Biol. Technician
Paul E. Woggon - - - - - - - - - - - - - - - Tractor Operator
Milton Strack - - - - - - - - - - - - - - - Laborer, Maint.
David J. Coady - - YOC - - - - - - - - - - Student Aid
Jack J. Jasinski - YOC - - - - - - - - - - Student Aid

*Details of transfer on Page 39 and 40

C O N T E N T S

I. GENERAL

A. Weather Conditions

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp.
January	2.62	1.02	17.25	47	-39
February	1.07	1.01	19.25	50	-32
March	1.47	1.91	7.90	78	-19
April	3.46	2.65		70	20
May	1.72	4.38		92	22
June	10.04	4.98		86	40
July	2.26	3.77		89	40
August	3.11	3.33		87	32
September	4.02	3.35		80	22
October	3.55	2.27		81	17
November	.75	2.24	2.50	62	4
December	.90	1.36	6.25	52	-25
Annual Totals	34.97	32.26	53.15 Extremes	92	-39

January - On 10 days during the month at least one-half inch of snow was recorded. Precipitation from the melted snow amounted to 2.62 inches which is $2\frac{1}{2}$ times the normal amount. There was a wide range in temperatures from a high of 47 degrees to a low of minus 39 degrees. For the entire month, temperatures averaged above normal.

February - Precipitation was near normal for the month, a total of 19.25 inches of snow fell. On fourteen days during the month temperatures dropped to zero degrees or lower which is considerably colder than normal.

March - March was unusually free of snow. On March 1 the snow cover was about 14" deep. Mild temperatures persisted throughout the month and at the end of the month the snow cover was gone. Some ice was still present in the pools at the end of the month but large open water areas could be found in most pools.

April - The weather was cloudy and showery throughout most of the month. A rather mild first half of the month combined with cooler weather during the latter part to produce near normal temperatures and precipitation slightly above normal. Winds up to 35 mph were recorded on April 14th. The last snow flurries were observed on April 22nd and melted shortly afterwards.

May - This month was ranked by the State Weather Bureau as one of the coldest Mays in the past 100 years. Frosts were reported on 6 occasions during the month. Only light precipitation was received with less than one-half the normal amount being recorded.

June - This year June was the wettest since records have been kept at the refuge. More than twice the normal amount was received. On four days over one inch was received and once over 2" was recorded. Temperatures averaged below normal.

July - Temperatures averaged slightly below normal while precipitation was 1.5 inches below normal. The most significant factor about July weather was the hordes of mosquitoes that hatched almost everywhere due to the exceptionally wet month of June. Local people claimed it was the worst year in the last decade.

August - Air masses of polar origin kept temperatures generally below normal and humidities were unusually low. Light frost nipped some of the corn on August 31.

September - Dry air of Canadian origin covered this area on most days as was so typical in August. This resulted in many cool, clear nights. Rainfall was only recorded on four days during the entire month.

October - For the fourth consecutive month temperatures averaged below normal. The first snow flurries occurred on the 27th. Frequent rains improved pasture and soil moisture conditions and a good moisture supply is stored in the soils.

November - Very little precipitation was received during the month. The ground became snow-covered for the first time this fall on November 15th. Later in the month 2 inches of snow was recorded. By the 20th of the month most of the larger pool areas had frozen over.

December - December weather started off with the usual cold temperatures and snow flurries. Around the middle of the month some of those Canadian air masses began moving through this area and dropped the temperatures down to around 15 degrees below normal for the second half of December. At the end of the month the ground was covered with about one inch of snow.

For the entire year, precipitation amounted to 2.71 inches above normal. Although several severe storms passed near the refuge, for the first time in several years we are happy to report no damage to refuge timber.

B. Habitat Conditions

1. Water

With the exception of June, which was one of the wettest months on record, water conditions during the year were considered close to normal. Average precipitation for this area is 32.27 inches and the amount recorded this year was not significantly higher at 34.97 inches, although 10.04 inches fell in June. Runoff that accompanied the June rains resulted in the spillway of Pool 18 washing out and the heavy rains also hampered refuge farming operations causing reduced crops.

In general, refuge pools were held at or near desired elevations during the spring runoff and early summer. There was a slight reduction of water levels by mid-summer but it is felt this had no adverse effects on waterfowl use. Early fall elevations were also somewhat below desired elevations but there was not enough inflow or precipitation to raise them at that time.

In late November after waterfowl had left most pools were lowered to make room for early spring runoff. It was also necessary to begin draining the Sprague Pool in December so that repairs on structure No. 29 can be made. The concrete channels that hold stoplogs in this structure are eroding and steel channels are to be installed.

2. Food and Cover

Food and cover conditions were not as favorable as the past two years. Weather conditions during 1967 resulted in poor growth and production of seed. Cover conditions were fair but available mast and weed seeds were in short supply and resident game and song birds had to search for food. Prolonged periods of deep snows put an even greater stress on wildlife and it is thought that losses were significant. Many turkey carcasses were found and the squirrel population decreased substantially. Both species depend heavily on oak mast which was in very short supply. The two species of grouse had an ample supply of buds to carry them through the winter. Prior to the deep snows left over grain on the agricultural units was available and used to some extent by turkey. Deer browse and cover was in plentiful supply and although deer use may have shifted from low growing species to less desirable plants the herd came through the winter in good condition.

Spring migrating waterfowl found an abundant supply of moist soil foods in Rynearson 2 and the Goose Pool and use was good on those areas. The highest whistling swan peak ever recorded was largely the result of foods in Pool 2. Agricultural units were relatively open in April

and provided some leftover buckwheat seed and browse. Alfalfa on the Laske and Carpenter Units attracted many migrant geese and deer looking for fresh succulent browse.

Nesting cover from the previous year was fair and early nesting geese and ducks had no problem finding cover. Later nesting birds had a lush growth of vegetation because of heavy rains in May and June. Timber removal and controlled burning again stimulated the growth of desirable cover for nesting wildlife.

Frosts in May killed some of the wild berry crops but scattered patches produced bumper crops. The chokecherry crop was poor while blueberries, huckleberries and elderberries were plentiful. Upland game birds, particularly turkey and grouse, undoubtedly made good use of the plentiful supply of berries. Insect and aquatic animal life was again abundant and provided the bulk of the food supply for the young of waterfowl and upland game species. Emergent cover although scarce during early summer quickly put on growth and provided brood cover for young waterfowl. A mid-summer growth of aquatics, particularly Potamogeton diversifolius, provided an abundant supply of food for local waterfowl. Rynearson 1 and the Sprague Pool produced their usual abundant supply, however, lowering water levels in late summer and early fall on the Sprague Pool decreased the supply of aquatics there. The exposed mud flats provided an excellent growth of needlerush and spikerush which was heavily used by Canada geese in the fall. Rynearson Pool 2 was held full this summer and provided a limited supply of aquatics as did most of the smaller northern impoundments. The most common aquatic plants found in the refuge pools included many species of pondweeds, elodea, water milfoil, bladderwort and coontail. Rynearson 1 again was the only pool to provide significant beds of wild celery which have annually attracted fair numbers of divers.

Moist soil food plants were fairly abundant but provided a decreased supply of waterfowl foods this year. The Goose Pool was the only impoundment managed for moist soil food production and weather conditions were unfavorable for good growth. Heavy rains and high water during June limited the growth of smartweeds, millet and bidens which last year produced a bumper crop of seed. Growing conditions were apparently favorable for the growth of manna grass as the Goose Pool was full of it and attracted large numbers of waterfowl. Canada geese and mallards were particularly attracted to the pool. Because Rynearson 2 was not drawn down that unit received decreased use this fall. Despite the heavy use of the Goose Pool there will be some moist soil foods available for nest years spring migration.

The wild rice bed which was expanded to other portions of Rynearson 1 and Pool 19 produced only a limited supply of seed. Fluctuations in water levels apparently had something to do with the poor growth year year, however, the seed that was produced was readily used by wood ducks, pintails and gadwalls.

Wet conditions in May and June followed by relatively dry weather resulted in poor refuge agricultural crops this year. Much of the corn crop was either flooded or crowded out by weeds because the fields could not be cultivated. Buckwheat production was also down and the 182 acres of browse crops provided limited succulent browse. Canada geese and sandhill cranes utilized all of the available corn but only a portion of the buckwheat strips. The failure of the agricultural units to consistently attract waterfowl was partially attributed to the lack of good browse. There was an ample supply of leftover grain and weed seeds for turkeys and other game birds which favor the farm units during the late fall and winter.

Generally fall and early winter cover was good and should provide suitable protection for resident wildlife throughout the winter. Spring frosts and unfavorable growing conditions resulted in poor weed seed and mast production this year and turkeys and squirrels are expected to face a severe test this winter, particularly if the snows are deep. Through December snow conditions were moderate and most of the ground feed was still available.

II WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Whistling Swans

The first whistling swans arrived on the refuge on March 29 when 8 birds dropped in Rynearson 2. A heavy migration on the following day increased the refuge population to 327 with the majority of use occurring on Pool 2. One week later during April 6 - 8th many flocks were seen migrating over the refuge. The refuge peak of 810 was reached on April 7 with all use occurring on Rynearson 2 and Sprague-Mather pools. Abundant moist soil foods left from last years excellent crop attracted 610 swans to Pool 2 and resulted in 3,831 use-days for that unit. The peak of 810 is the highest ever recorded at this refuge. The previous high was 400 in the spring of 1961. The majority of the swans continued their northward migration on April 8th. Three birds were seen at late as May 7 - 13 on Rynearson 1.

The first swans to arrive on the refuge during the fall migration were seen on Rynearson 2 the last week in October. During the following week swan numbers increased to 49 and the use shifted to Rynearson Pool 1 where they remained until mid November when a cold spell forced them south. The refuge attracts only a small portion of the swans that migrate eastward over the refuge each fall. Swan use-days were the highest ever recorded and were almost double that of last year. Total days use numbered 4,972 of which 4,265 were during the spring period.

b. Geese

The first migrant geese were observed scouting the Sprague Pool on March 10. Finding the pool frozen over the dozen birds flew south again toward the Wisconsin River. The first significant migration of Canada geese occurred on March 30th. The peak of 2,500 was reached during the week of April 9 - 15, two weeks later than last years spring migration. The peak was down from last years high of 3,500 as the migration was more gradual and the population did not have the chance to build. Spring use-days were down from last year, 50,378 compared to 72,100 in 1966. The decrease was about 10% below the 5-year average.

Much of the goose use was on Rynearson 2 where an abundance of moist soil foods were left over from last year. During the second week of April there was a shift in use to the Sprague Pool. Some off refuge feeding occurred but very little use was made of refuge agricultural units. By the end of April the refuge population had dwindled to 420 birds.

By the second week of May only the summer population remained and of the total of 140 birds, 35 breeding pairs were present. Despite no change in the number of pairs from 1966, production increased from 40 to 72 flight stage young. Production for the past 5 years has averaged 46. Six nests were located on islands of Rynearson 1, and Pools 19 and 28. Of 5 completed nests, the average clutch size was 5.6 which was 0.5 less than in last year. Brood size increased significantly as 8 flight stage broods showed an average size of 4.0 compared to 3.3 last year. Although two nest were known to have been destroyed by predators, nesting success and survival of broods was the best in several years.

Safe nesting sites are the key to increasing goose production on this area since complete predator control would be an enormous task. Isolated islands historically have raised geese year after year, particularly in Rynearson Pool 1. Islands of the smaller, northern pools are becoming increasingly attractive to nesting birds. Substitute nesting islands in the form of 75 fiberglas platforms have not shown any success as yet. In an attempt to speed up the acceptance of the platforms, two nests were lifted onto structures a short distance from the ground. Time is needed to determine if the young were imprinted and will return to nest on the platforms.

Rynearson Pool 2 was particularly attractive as a goose brooding area this year. Normally drawn down during the summer, the pool was held full and provided a lush growth of vegetation and aquatic insects. Five broods spent the summer on the pool and nesting probably occurred on the scattered islands and peninsulas.

Canada geese began to stage on the refuge beginning the first of August and during the last two weeks 250 were present. Annually geese raised on Meadow Valley, Sandhill, and the surrounding cranberry marshes move into the refuge during August. In the past it was suspected that these local birds were remaining into the fall period and were being shot heavily locally. Band recoveries and early arrivals of geese on the Louisa Unit of the Mark Twain Refuge give indications that Necedah's birds are moving out prior to Wisconsin's waterfowl season

and are being harvested around the Burlington, Iowa area.

Fall migrant Canada geese began to move in during the third week of September and quickly increased to the fall peak of 9,750 during October 1 - 7. A Canadian cold front caused the big buildup on the 3rd, about one week earlier than last years peak. The peak shows decreases of 10.9% from last year and 6.7% from the 5-year average. The population quickly dropped off after the first of October and by early November numbered only 1,000. A few geese remained throughout December but most moved south on November 20.

Throughout the fall period most of the goose use was on Unit 3 with the majority of the birds utilizing moist soil foods in the Goose Pool and needlerush flats of the Sprague Pool. These two pools attracted 57% of the peak and accounted for 53% of the fall use-days. Total fall use was down 21% from last year primarily because of the lack of moist soil foods in Rynearson 2 and the failure of the refuge agricultural crops. Pool 2 was held full this summer for other management purposes and the resulting fall use dropped from 136,150 use-days last year to 48,000 in 1967. All other units showed increases over last year with Unit 4 making the most significant gain.

Feeding flights to private farmlands south of Highway 21 were limited this fall which is reflected in the lower kill there. However, farming efforts by the WCD resulted in increased kill on the firing line and Meadow Valley Flowage and the total kill from the flock was similar to last year. Early use of the refuge agricultural units depleted the limited supply of corn and buckwheat, and marginal browse failed to hold the interest of the geese.

Increased use by most units throughout the year were more than offset by the decreased fall use of Rynearson 2. Decreased spring and fall use resulted in a decrease of 22% Canada goose use-days from 1966. Use was down 31% from the 5-year average of 466,621.

Blue and snow geese were represented by a lone blue goose on Rynearson Pool 1 during early April. Past records have shown that few of these birds ever stop on the refuge despite limited migrations over the area. The first fall migrants arrived in mid-September on the Goose Pool. The peak of 215 occurred in mid-November and was considerably below last years peak of 910 and down 84% from the 5-year average. The Goose and Rynearson 2 pools received the majority of use because of moist soil foods available. Total use-days decreased 58% from last year and were down 75% from the 5-year average of 24,725.

Goose Use

	1967	1966	1965	5-year Average
Canada (peak)	9,750	10,950	9,800	10,452
Canada (use-days)	323,763	412,460	424,054	466,621
Blue, Snow and White-fronts (use-days)	6,216	14,945	16,457	24,725
Total Use-days:	329,979	427,405	440,511	491,346

C. Ducks

Spring duck use was up 28% over last year while the peak was nearly doubled. The population increased gradually until the peak of 7,190 was reached during the second week of April, a full 2 weeks later than in 1966. Mallards which made up over 62% of last years peak of 3,615, were down slightly. Most of the increase in peak duck numbers was the result of increased use by divers. The scaup peak of 1,300 was double that of last year. The mallard peak of 1,800 represented 25% of the refuge peak and was by far the most abundant puddle duck.

The increase in duck use was largely the result of substantial increases for scaup, blue-winged and green-winged teal. Other species showing increases were ring-necked duck, shoveler, pintail and canvasback. Mallard use showed a large decrease, down about 15,000 use-days from last years 52,080. Other species showing less significant decreases were goldeneye and hooded merganser.

Duck use was more equally distributed in Units 1, 2 and 3 this year with Unit 3, consisting of the Sprague Pool, accounting for just over 1/3 of the use. This was in contrast to last year when approximately two-thirds of the use occurred on that unit. Left-over moist soil foods in Rynearson 2 resulted in a large increase for Unit 2. Most of the increase was by mallards. Good diver use on Rynearson 1 resulted in the increase on that unit. Use of the smaller, northern pools was again encouraging with good use by puddle ducks.

Duck use during the summer was up for the third consecutive year. The increase of 27% over last year was largely the result of 20,000 use-day increases for mallard, blue-winged teal and wood ducks. Scaup, green-winged teal and baldpate use was also up substantially while other species showed only slight increases or decreases. By the beginning of the third week of May the spring migration had subsided and the summer breeding population remained relatively unchanged.

Despite the highest breeding pair count since 1961 duck production was the lowest in 8 years. The pair count, conducted on May 10, showed 792 pairs of which 44% were mallard and 38.5% were blue-winged teal. The

total count represents a 40% increase over last year and a 65% increase over the five year average. Scaup, green-winged teal, wood duck, hooded merganser, black duck and baldpate made up the remainder of the list of species picked up in the count. Based on the pair count and random brood observations, production was estimated at 600, about 1/3 of last years total of 1,775. Predation, mainly by raccoon, was the primary cause of the decrease. After apparent early nest losses there was a significant increase in mallard pairs during the last week of May. The expected second nesting attempt did not materialize as heavy rains and high water in June took its toll of nests.

Wood duck numbers increased gradually through the summer as birds began to stage on the refuge. Excellent production habitat in portions of the Yellow River bottomlands east of the refuge raised a fair number of birds again this year.

Migrant ducks began to move in during September with blue-winged and green-winged teal reaching their peak during the last week. A gradual buildup of most species continued through September until significant increases began to occur in October. The fall peak of 19,505 was reached on October 22 - 28 with mallards, ring-necked ducks and baldpate making up 84% of the total. The peak represented a 23% increase over 1966 but a slight decrease from the 5-year average of 22,012. Mallards and ring-necks, which made up 49% and 23%, respectively, peaked during the same week of the fall peak while baldpates reached their highest numbers during the first week of October. Throughout the fall period mallards represented between 40% and 50% of the peak and accounted for 41% of the fall use-days.

Fall duck use-days were up 29% from last years low of 610,003 with mallards and ring-necked ducks showing the largest increases. The total still remained 15% below the 5-year average. Baldpate, wood duck, black duck, pintail and gadwall showed increases of between 10 and 20 thousand fall use-days. Gadwall showed the most significant change increasing from 29 days-use in 1966 to over 10,100 this fall. Approximate percentages of increase for other species were: ring-necked 198%, pintail 73%, black duck 51%, wood duck 57%, mallard 21% and baldpate 13%. Green-winged and blue-winged teal use dropped 39% and 26%, respectively.

Sprague and Rynearson Pool 1 attracted the majority of ducks throughout the fall period. Rynearson 2 failed to attract its usual number of birds since the pool was not drawn down for moist soil food production this summer. The Sprague Pool complex, largely because of the Goose Pool, had the best fall use by puddle ducks. The Goose Pool was drawn down during the summer and despite one of the poorer moist soil food production years provided a bountiful supply of seed. Heavy mallard use attributed to the high number of use-days on that unit. Unit 3 which includes the Sprague and Goose Pools accounted for 44% of the total fall use-days while Unit 1 (Rynearson 1) accounted for 32%. Much of the use on Pool 1 was the result of good diver use. The Sprague Pool was again a disappointment showing only limited diver use.

Use of the smaller pools in Unit 4 increased this fall but is still considered limited. Duck numbers remained high until a cold front on November 4 froze most of the pools and forced the birds south. From that time on, gradually decreasing numbers were present throughout the remainder of the year.

Because of increases in use during the spring, summer and fall periods, annual duck use-days were up 28% from last years low of 992,695. However, the total is still 3.5% below the 5-year average.

Peak Duck Populations

	1967	1966	1965	5-year average
Spring	7,190	3,615	4,130	6,475
Fall	19,505	15,915	17,535	22,012

Annual Duck and Coot Use-Days

	1967	1966	1965	5-year average
Ducks	1,275,105	992,695	1,042,307	1,321,002
Coots	248,100	207,920	72,530	224,668

d. Coots

Coots were first observed on March 30 when 25 were seen on Rynearson 1. Spring coot use increased significantly over last year. Total numbers reached 1,100 compared to 200 last spring and 300 the previous year. Use-days increased 666%, 19,300 compared to 2,520, with the Sprague Pool accounting for just under 40% of the use. Rynearson 1 was also attractive to fair numbers of coot.

Coot production showed no change from last year and an estimated 35 were raised. No broods were observed but scattered sightings of adult birds throughout the summer on most refuge pools indicated a limited breeding population. The lack of abundant emergent vegetation is partially responsible for the low production.

The fall coot population of 5,400 peaked in mid-October with the heaviest use occurring on Rynearson Pool 1. The peak was about 2,000 less than last fall, however, prolonged use resulted in a 8% increase in fall use-days. The total of 248,100 use-days represented a 19% increase over last year. Extensive beds of aquatics in Pool 1 attracted rafts of coot and accounted for about 50% of the use-days while the Sprague Pool accounted for about one-third. Total use was slightly above the 5-year average.

Peak Coot Populations

	1967	1966	1965	5-year average
Spring peak	1,100	200	300	620
Fall peak	5,400	7,300	2,000	6,490

2. Other Water Birds

Sandhill crane use was down from last year, however, higher numbers were present during the spring and summer periods. The first cranes arrived as a group of 5 on March 25 and gradually built up to the spring peak of 40 during the middle of April. After a decrease during May, the summering population stabilized at 20 birds. Several breeding pairs were seen quite frequently around Rynearson 1, Sprague and a few of the smaller northern pools. No young were observed this year, however, after last years sighting of young it is believed that the refuge annually raises some young sandhills. In late August cranes started to increase and on the 24th about 85 were making a pest of themselves on the Rynearson 1 banding site. During the week of September 10 - 16, the peak of 180 was reached. This was the third highest total recorded at Necedah but was 70 fewer than in 1966. Numbers fluctuated between 90 and 150 until cold weather and frozen pools on the night of November 4th forced the birds south.

Generally sandhill crane use was split between Rynearson Pools 1 and 2 where about three-fourths of the birds spent most of their time. In one week period in early September, use was heavy on Pool 1 and then surprisingly shifted to Pool 2. Fair use was made of the refuge agricultural units during the spring and fall periods. The Canfield Units were particularly attractive in the fall.

Great blue herons were first represented by a lone bird on March 26 and by late April had reached their spring peak of 40 - 60. Summer numbers increased to 100 - 120 in August. The number of nests on the Sprague Pool rookery increased from 29 to 49 and represents the second consecutive year of increase in nests. The colony was hit by disaster this summer as many young were found dead in their nests during the July survey. An estimated 15 - 20 were raised compared to 40 in 1966. Disease or a severe hail storm could be the cause for the losses. In the past as many as 450 herons were raised in the rookery which contained 300 nests.

American egrets are only occasional visitors, however, as many as 15 were present on the Rynearson and Sprague Pools during early August. The shallows of Rynearson 2 were particularly attractive to these beautiful birds. One single was seen on April 25.

American and least bitterns, and green herons were frequently observed near the marsh margins of most pools. American bitterns were the most common and were often heard sounding their mating calls in the spring. Fewer sightings of herons were made compared to last year.

Pied-billed grebes were first seen on March 31 and between 50 and 100 were present during the spring and fall migration periods. A few spent the summer on the refuge.

Horned grebes were observed on April 26 and peak numbers were estimated between 10 and 30.

Sora and Virginia rails were common throughout most of the refuge. They remained relatively inconspicuous during the spring breeding season but were often heard. In late August rails were particularly abundant in the shallows of Rynearson Pool 2 where numerous other shorebirds were found. A large arrowhead (Sagittaria) patch seemed to be the favorite haunt of the rails and on August 20 about 30 were flushed from the area.

Common loon arrived about a month earlier than the reported date in 1966. A single bird was seen on April 6 this year. Peak numbers as in the past did not exceed 3 - 5 birds with a few spending the summer on the refuge.

3. Shorebirds, Gulls, and Terns

Killdeer, snipe, woodcock, upland plover, two species of yellowlegs and four species of sandpipers were the most common shorebirds present on the refuge. Killdeer and woodcock were among the first arrivals in late March while other species did not show until April. Three uncommon Wilson's phalaropes were sighted in mid-May. The shallows and needlerush flats of Rynearson 2 and the Sprague Pool attracted the largest numbers of shorebirds throughout the summer and early fall periods. In late July and August lesser yellowlegs, sandpipers, snipe and killdeer reached their peak. Upland plovers nest on the refuge but are seldom seen. By far the most conspicuous shorebird is the greater yellowlegs.

Gulls were represented by two species and terns by three this year. In late March the first ring-billed gulls were seen over the Rynearson Pools. A few herring gulls spent the summer on the refuge and were joined again in the fall by migrating ring-bills. Forster's and black terns were first sighted in mid-May with peak numbers of black terns occurring on Rynearson 2 in late July and early August. Numerous terns made their presence known during drive-trapping operations on that pool in July. The third species of tern, the common tern, is less common as is the Forster's.

Doves

Mourning doves were present in comparable numbers to last year. The first dove was observed on March 25 and numbers gradually increased to 100 - 150 in late April. Considerable dove nesting occurred on the refuge, particularly in the area of the agricultural units. Trapping ratios showed a slight decrease in the number of young in the population which may be an indication that heavy June rains destroyed some nests. A total of 146 doves were trapped compared to 124 in 1966 and 234 in 1965. Although the trapping effort varied somewhat, the number trapped indicates the trend in dove populations. Doves increased slightly during the fall migration period and a few were present into December.

B. Upland Game Birds

Ruffed grouse numbers have decreased slightly despite last years gain and a good winter carry-over. Spring drumming activity was down this spring, however, part of this was due to the unseasonable cool weather. Normal nesting was suspected to occur but the cool, wet spring took its toll. Decreased nesting success was substantiated by the reduced number of brood observations during the late summer and early fall. Although many single, adult bird sightings were made there will be few young grouse in the breeding population next spring. At the same time the refuge population was down the WCD was reporting the best ruffed grouse population and hunt season in ten years. An easy winter, and favorable spring nesting conditions are needed to start the refuge population on the upswing again.

Sharp-tailed grouse were also affected by the unfavorable nesting conditions this spring and a reduced number are suspected. Checks of the lone dancing ground showed a decrease in dancing males from 9 last year to only three this year. Four other grouse were seen near the area but did not display. The population is estimated at 30 - 50 birds which is 20 fewer than last year. Only one other sighting of sharp-tails was made and that occurred south of the refuge near the Suk-Cerney Flowage. In the past a substantial number of birds survived in that general area but habitat changes have taken their toll. Controlled burning will be undertaken on 12,000 acres of the refuge to establish marsh and grass cover and is expected to increase the sharp-tailed grouse population substantially.

Wild turkeys experienced a winter having deep snows and lack of preferred foods. Mast and seed production the previous year was poor and for considerable periods the snow depth was deeper than the 15 inches that turkeys are expected to scratch through for their food supply. These conditions resulted in poorer condition of the birds and winter losses were significant. Many carcasses were observed. The spring nesting season was no better for turkeys than it was for grouse and production was down. Few broods were seen during the summer and the usual fall appearance of broods did not materialize. The few that were sighted during the fall period showed much variation in size and age, further indicating poor production.

During December the birds began to concentrate near the Bewick feeder and on the Canfield agricultural units. Three small concentrations of birds were utilizing the buckwheat strips on the middle Canfield Unit. A number of scattered observations of turkeys on and off the refuge indicates that the population is continuing to spread, and that the birds will winter in smaller concentrations. In the long run this will benefit the population since it will speed the expansion of turkey range and make them less susceptible to large scale losses. It is expected that turkeys will face another hard winter since the mast and seed production was poor again this year. The population presently numbers between 400 and 450 birds, with an estimated 1,500 in the entire central Wisconsin flock.

Woodcock numbers this spring increased slightly as indicated by the results of the three woodcock singing ground surveys. Only one of the surveys is conducted adjacent to the refuge, however, these surveys generally indicate the population trend for the entire area. Production of woodcock was assumed to be normal although no nests or broods were observed. The fall migration of these excellent game birds was slightly below that of last year. This was largely due to the cold weather which forced the birds through the area fairly rapidly, preventing any large buildup. Light hunting pressure on woodcock in this area resulted in limited harvest.

Bob-white quail after a significant increase last summer faced a harsh winter and decreased numbers this year. Low winter carry-over and limited production leaves the population in the "remnant" status. No sight observations were made this year, however several calling males were heard near the secondary headquarters area. In this marginal quail range the population is never expected to flourish.

Ring-necked pheasants remain uncommon on this sub-marginal range. No observations were made this year but a very limited population persists near the primary and secondary headquarters areas. Pheasants are hunted in the area south of the refuge only because of releases made prior to the hunt season. A study of releases made on a hunting preserve showed only 8% surviving into the next year, a pretty good indication that pheasants do not do well in this part of Wisconsin.

C. Big Game Animals

White-tailed deer numbers decreased from the 2,800 during the period of heaviest use last year to an estimated 2,400 this summer. The percentage of multiple fawn births increased from 25% last year to 41% this year, however, this increase was not able to offset the poorer production of last year. One set of triplet fawns was sighted. The low refuge deer harvest of 340 animals substantiates the lower population estimates. In the future, refuge management in the form of timber removal and controlled burning may reduce deer numbers and harvest, particularly in Area 3 during the late bow season.

Black bear is the only other big game animal found on the refuge. Sightings are infrequent since the number on the area seldom exceeds 1 - 3 transients. This fall a hunter reported the first sighting since 1963. The bear was seen in the area south of the Goose Pool. A member of the refuge staff also caught a glimpse of a large mammal, thought to be a bear, in the Pool 19 area this spring. The flat topography of the refuge does not provide denning sites for bears interested in staying year-round.

D. Fur Animals, Predators, Rodents and other Mammals

Mink numbers continued to increase this year after two years of low populations. Mink sign and sightings were more numerous throughout the refuge. The minks primary food supply, muskrats, are also on the increase so populations should continue on the upward trend. Trappers this fall removed 13 animals.

Muskrats, despite low winter water levels on many of the pools, particularly the Sprague Pool, showed an increase again this year. Since the low population in 1965 they have steadily increased. Rynearson Pool 2 which is normally drawn down for moist soil food production was held at full pool this summer. The resulting growth of vegetation attracted large numbers of rats and houses were built throughout the pool area. The Sprague and Rynearson pools and seepage areas annually support the largest segment of the refuge muskrat population. Trappers removed 212 rats this fall.

Beaver numbers sky-rocketed following a closed season in 1966 and a poor trapping season in 1967. Because of the ice and heavy snow conditions in January and February, only 13 beaver were removed by permittee trappers. Active colonies are present on most of the major ditches flowing through the refuge and in many cases beaver have plugged culverts and dammed control structures. Trapping had to be undertaken on some colonies that were flooding the Finley, Sprague and Speedway Roads. A total of 5 were live-trapped and 2 steel trapped. Liberal permittee trapping will be allowed to reduce the population to a more desirable level.

Otter increased substantially this year and many observations were made throughout the refuge. These animals are wide travellers and were present on all pools and ditches at one time or another during the year. Frequent observations were made of animals or sign on Sprague, Pool 9, and Rynearson Pool No. 1. On October 29, 12 otter were seen in the borrow ditch along the APW dike on Pool 9. They were easily counted one by one as they crawled over a beaver dam on one of the ditches. The population is estimated to be 80 - 100.

Raccoon increased as expected after last years outbreak of encephalitis. The population will probably continue to build until it reaches the high level of 1965. Predation by coon was largely responsible for the lowest duck production in many years despite one of the highest breeding pair counts. Some control of predators seems necessary to insure safer nesting for waterfowl. Trappers and refuge personnel removed better than 60 raccoon throughout the year.

Striped skunk are fairly common and showed a slight increase over last year. Sightings are most common around the agricultural areas.

Badgers are present in limited numbers as evidenced by their diggings.

Opposum for the second straight year have made several appearances. The population has not changed from last year but is undoubtedly higher than the previous four years when no sightings were made.

Weasel are seldom seen but are present on most portions of the refuge. Trappers removed 2 during the fall trapping season.

Woodchuck are present in limited numbers although none were seen during the year.

Red fox apparently decreased in number based on fewer observations this year. Active dens of past years did not raise young and fewer tracks were seen after the first snows of the year. Gray fox although known to be present in limited numbers were not sighted for the second straight year.

Coyote numbers showed no change from last year. The refuge population remains fairly stable from year to year. Coyote were frequently heard howling on the Sprague Pool and were most commonly seen on the Rynearson Pools after the late bow season. Deer gut piles provide a tasty meal for the hungry critters.

Squirrel numbers decreased drastically from the previous years of high populations. Gray, red, fox and flying squirrels in that order of abundance were present in reduced numbers throughout the refuge. Poor mast production last year and a harsh winter attributed to the decrease in squirrel numbers. With the poor seed and mast production this year the population is not expected to make substantial gains next year.

Cottontail rabbits decreased and the population remains limited to a few areas of the refuge. Snowshoe hares although not seen are probably present.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Marsh, sparrow and red-tailed hawks were the most common predatory birds present on the refuge throughout the year. Others such as rough-legged and red-shouldered hawks were common during certain periods. Cooper's hawks and goshawks were present in fair numbers and observations were common. An infrequent sighting of a duck hawk was made on May 8 just north of the headquarters area.

The spring hawk migration started in late March reaching a peak in April with red-shouldered, rough-legged, red-tailed and marsh hawks the most abundant. Sparrow hawks peaked in late April and early May and remained along with red-tailed and marsh hawks as the primary nesters on the refuge. Two sparrow hawks nested in wood duck boxes on the Sprague Pool and at least two other family groups were observed during the summer. Red-tails raided dove banding sites late in the summer

but killed only a few doves this year. The primary summer residents were joined in the fall mainly by rough-legged hawks which reached their peak in late October and November. Most hawks were present through November with a few red-tailed and rough-legged hawks remaining in December.

Bald eagles were frequently observed during the spring and fall periods when waterfowl were present. Periodically eagles wander over from the Wisconsin River area throughout the year. On March 22, 4 were seen migrating in a soaring pattern over the Pool 19 area. Peak concentrations of bald eagles occurred during late October with as many as 10 using the Sprague and Rynearson Pools. Eagle activity reached its peak along with the peak in waterfowl populations. One morning during the fall banding operation 7 eagles were observed fighting over a raccoon carcass about 50 feet from the banding site. Periodically the birds would test the reactions of hungry ducks waiting to use the bait on the site. Eagle numbers decreased in November as most of the waterfowl departed for the south, but an occasional visitor found its way over from the Wisconsin River during December. Annually the open water below the Petenwell Dam on the Wisconsin River attracts and winters a large number of eagles.

Golden eagles are less common and occasionally visit the refuge, particularly during the fall period. As many as 3 were present in late October.

Osprey were observed in spring migration over the refuge and were occasional summer visitors. Between April 19th and 23rd, 6 osprey were seen moving through the area. Osprey nesting has occurred a number of years on the Potter's Eagle Nest Flowage west of the refuge and it is thought that it is these birds that periodically visit the refuge during the summer. Checks of habitat on the Sprague Pool failed to reveal any nest attempts.

Turkey vultures are not commonly seen in this area, however, one was observed soaring over Rynearson Pool 1 on May 9. This is the first recorded observation in a number of years.

Owls are present on the refuge in varying numbers depending on the species. Of the 6 species recorded, great horned and barred owls are the most common. Screech, long-earned and saw-whet owls are year-round residents but are less common. Sightings of great horned owls were again surprisingly frequent this year while the remainder of the species were most often heard and not seen. Two observations of a snowy owl, believed to be the same bird, were made on Rynearson Pool 1 in early December.

Crows were common throughout the year on most parts of the refuge. Peak activity occurred during the fall period. Some crows nest on the refuge and the summer population probably results in some nest losses.

Ravens although not identified on the refuge were probably present in limited numbers. In November ravens were observed in the Yellow River bottoms one mile east of the refuge.

F. Other Birds

The usual winter residents were again present near winter feeders. Blue jays, Black-capped chickadees, white-breasted nuthatches, tree sparrows and hairy and downy woodpeckers were the most common while horned larks, slate-colored juncos, cedar waxwings and red-bellied woodpeckers were less abundant.

Snow buntings and horned larks were particularly abundant during early March. A lone Eastern meadowlark was observed on March 9 followed three weeks later by the usual spring migration. Prolonged cold weather delayed the arrival of such early migrants as red-winged blackbirds, starlings, kingbirds and flickers. The delayed breakup resulted in many migrants arriving near the end of March.

The first mourning dove and robin were observed on March 25 and 26th, respectively. During the second week of April purple martins and tree swallows arrived.

Nesting of the "other bird" species appeared to be normal with the usual noticeable large population of tree swallows on the Sprague Pool. Other prominent nesters included Baltimore orioles, red-winged blackbirds, kingbirds and starlings.

In late August nighthawks migrated through the area but the event was not as spectacular as last year. One other noticeable migration occurred during the first three weeks of September when numerous yellow-shafted flickers moved through the refuge. All other bird species migrated in normal fall concentrations.

G. Fish

Northern pike, perch, sunfish, bullhead, carp and sucker were present in varying numbers in most of the refuge pools. Generally fish populations vary from one year to another depending on fluctuations in pool levels. During the past three years Sprague and Rynearson Pool 1 have experienced low water levels and a reduction in fish populations. Winter drawdowns for rough fish control during two of these years resulted in the largest kills. All of the refuge pools are supplied by ditches which serve as restocking accesses. The larger fish, northern pike and carp, are mainly present in Sprague and Rynearson 1 with the Sprague Pool providing the only refuge fishing opportunity.

To speed the restocking of the Sprague Pool the WCD netted and transplanted 470 northerns from below Rynearson 2 structure. The heavy spring flow of water through the structure stimulates the run of pike

up the ditch from the Yellow River. Most of the fish netted were in the 12 - 15 inch, 1½ pound size with a few as large as 5 - 6 pounds. Although some fine catches were made by fishermen this year it will take about three years for the pool to develop its full fishery potential.

Small minnow populations were particularly abundant on most of the smaller pools and provided a bountiful supply of food for herons and fish-eating ducks.

H. Reptiles

Relatively few observations were made of reptiles this year. Below is a list of those observed during routine refuge operations:

Common snapping turtle
Blanding's surtle
Western painted turtle
Northern leopard frog
American toad
Eastern hognose snake
Eastern garter snake
Green snake

Other common reptiles not seen this year include: gray treefrog, five-lined skink, fox snake, red-bellied snake and water snake. Turtles are the most commonly observed since their habits bring them out of the water to lay their eggs and loaf. Fewer sightings of egg laying turtles were made this June, however, numerous nests were seen after raccoons had dug them up. Although several large snappers were observed lurking in shallow marsh areas late in the summer decreased activity was noted on the dikes in June, possibly indicating a slight decrease in the population.

I. Disease

During the annual check of the great blue heron rookery it was discovered that a large number of nestlings had died. Of the total of 49 nests, 7 were checked closely and 6 had dead young. Losses were estimated between 35 and 45 young. Because of the decomposition of the birds they were not collected for autopsy so death cannot definitely be attributed to disease. Water and food conditions were normal and the population was not particularly high.

During the month of June portions of the refuge experienced heavy hail storm activity and possibly this was the cause of death to the young herons. Whether or not the Sprague Pool rookery was in the path of one of these storms is unknown.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Water Management

Made new stoplogs for water control structures No. 13, 19 and 27.
Leveled slopes and repaired emergency spillway to Pool 18, used 32 yards of rip-rap.
Hauled fill on Pool 19 dike.
Placed five yards of rip-rap to fill holes by riser on No. 9 control.

2. Road and Trail Maintenance

Constructed fire break around boneyard
Put 64 yards of gravel on Laske road.
Constructed one mile of fire break south of Pool 13.
Constructed $\frac{1}{2}$ mile of fire break on west side of Rynearson Pool 1.
Constructed two miles of fire lane north of Rynearson Pools 1 and 2.
Installed two culverts north of Rynearson Pool 1.

3. Fencing and Posting

Posted open and closed areas for spring turkey season, early and late archery season, and the deer gun season.
General maintenance on refuge boundary markers

4. Buildings

Quarters 1: Installed humidifier, bathroom fixtures and plumbing.

Quarters 8: Repairs to water system

Quarters 11 Painted exterior

Shop Installed air pipe, one and a half ton hoist, trolley on hoist beam and welded extensions on "I" beam and installed beam overhead for unloading supplies and equipment.

Carpenter Shop Painted exterior, installed new tool boards.

5. Equipment

Installed fire water tank in 6x6 truck, hooked pump to tank.
Painted snowplow
Built and installed tree guard for D-7 tractor.
Built and installed hood guard for D-7 tractor.
Installed old D-7 starting engine in 3T D-7 tractor.
Built and installed hitch lock control for fire trailer.

Equipment - continued

Installed used transmission in M-37 fire truck
Painted gasoline and diesel fuel pumps at headquarters
Mounted fire pumps on M-37 fire truck.
Mounted Barnes pump on M-45 fire truck.
Welded tooth assembly of root rake for D-7 tractor.
Constructed and installed divider between cab seat and box of IHC Scout.
Many maintenance jobs performed on automotive, farm and construction equipment to numerous to mention.

Agricultural Units

*Potash and Boron fertilizer top-dressing 52 acres on Carpenter and Laske fields.

Miscellaneous Items

Constructed three banding pliers.
Pushed material together in boneyard for burning
Unplugged 70 feet of drain line from office basement to dry well

*Not reported in 1966 narrative report.

B. Plantings

1. Aquatic and Marsh Plants

Last year under the Youth Opportunity Campaign, youth workers transplanted 300 clumps of softstem bulrush from Rynearson Pool 1 to the Sprague Pool in an attempt to establish better brood habitat. After the first growing season it appears that the project was at least a partial success. Some of the bulrush has become established despite low water conditions on the pool. Several years will be required to determine the worth of such transplants. Under natural conditions the pool is lacking in emergent cover and food for waterfowl.

Last years attempt to expand the production of wild rice appears that it will be worthwhile. About 60 pounds of seed taken from the existing rice bed in Rynearson Pool 1 produced some rice in additional areas of Pool 1 and Pool 19. More time is needed to see if the rice will expand itself. Ducks make excellent use of the seed produced in the Williams Dike area bed.

2. Trees and Shrubs - None

3. Upland Herbaceous Plants - None

4. Cultivated Crops

Necedah's farming operation remained relatively unchanged. About 282 acres were under cultivation with an additional 225 acres fallow

or in native grasses. If needed all 507 acres could be put into crop production, however, special care should be given to sand blow-out areas on the Parham-Becker and Canfield Units. Presently attempts are being made to sod these critical areas.

All farming was done by refuge personnel with almost all of the required hay mowing being done by permittees. Farming was limited to the centralized Canfield Units again this year. Attempts were made to plant buckwheat in the Williams Unit but heavy rains in June prevented it. All of the smaller fringe units were maintained in the grasses and legumes of a year ago. Cropping in 100 foot alternate strips of corn, buckwheat and browse provide best utilization by waterfowl. The total refuge crop acreage included 45 acres of corn, 55 acres of buckwheat and 182 acres of grass and legume browse crops.

Limited new grass and legume seedings were made this year, however, several acres of last years plantings had to be interseeded. Frequent rains in May and June caused most of the plantings to flourish and excellent sod cover developed. Deer and goose use of the alfalfa seedings on the Laske and Carpenter Units was good during the spring. Despite mowing of the plantings in August and September, fall use of the areas was disappointing. To maintain goose use on the refuge it will be necessary to re-establish rye browse on a substantial acreage of refuge cropland.

The same corn strips were planted on the Canfield Units and about 5 acres were added on the Field 1 west of the Little Yellow Ditch. Heavy rains and flooding during June reduced the corn acreage and yield considerably and the estimated 10 bushel per acre didn't last long under goose use. The plantings were fertilized, but side dressing, cultivating and atrazine application were delayed by wet fields and the resulting weed crop was too much for the corn.

The buckwheat crop experienced much the same fate as corn as the yield was down considerably from last year. Some strips were seeded while others had last years leftover seed disced into the ground. Both provided good density stands of plants but seed production was poor. The yield for the 55 acres of buckwheat was estimated at 15 bushel per acre. Geese and sandhill cranes made good use of the grain in certain areas and turkeys are making good use of that which was left.

An experimental planting of proso millet was made on 8 acres of the lower Canfield without success.

Farming plans for the future will include the addition of rye browse acreage and a slight increase in the corn acreage. Earlier application of atrazine on corn will reduce the competition of weeds and help to insure better yields.

A breakdown of cropland acreage by unit is shown below:

Unit	Buckwheat	Corn	Alfalfa	Clover-grass Mixtures
Upper Canfield	20g	20e		50f-g
Middle Canfield	25g	20e		45f-g
Lower Canfield	10f			10g
Field 1		5*		
Hanson				16p
Parham-Becker				9f
Laske			32f	
Carpenter			20g	
	55	45	52	130

Letters following acreages indicate degree of use by waterfowl:

e-excellent g-good f-fair p-poor *no crop

C. Collections and Receipts

1. Seed or other Propagules - None

2. Specimens - None

D. Control of Vegetation

The following weed and brush control activities were carried out during 1967:

1. On 182 acres 2,4,5-T was used to control willow (Salix spp.), blackberries (Rubus spp.), and Oak (Quercus Spp.). Areas sprayed included upland on the east side of Rynearson Pool 2, both sides of Little Yellow River Ditch from the Canfield Road to Sprague-Mather Road and both sides of the Goose Pool dike. This spraying was done in June and July with a portable back pack mist blower at a rate of 2 pounds acid equivalent per acre. The mist blower has given much better results than other application methods.

2. Atrazine at the rate of 2.5 pounds per acre was applied to 26 acres of corn to control quackgrass (Aropyron repens) and smartweed (Polygonum spp.). Poor results were achieved because of the late date of application and the absence of rain to get the atrazine into the soil.

3. Atlas-D debarking compound was used to kill oak on 325 acres. This treatment is necessary to facilitate timber harvest operations on the refuge as mills will not accept oak pulpwood with bark. No adverse effects to wildlife were observed after the treatment.

Refer to NR-12 forms for complete details of applications.

E. Planned Burning

The objectives of the 1967 burning program were three-fold; to improve waterfowl nesting habitat, keep upland areas in grass for upland game habitat, and improve the forest resource.

Because of the steadily increasing encroachment of undesirable plant species both in upland and lowland areas, our control burn program has been stepped up. This year over 4,100 acres were approved for burning and around 3,500 acres was burned.

Existing openings, islands and marsh margins must be continually burned to retard the invasion of undesirable woody and marsh vegetation. By burning pool margins and upland areas it is possible to maintain and even enlarge the open grassland types that are needed for nesting waterfowl and the remnant sharp-tailed grouse population.

The forest management burn was designed to eliminate slash and speed up jack pine regeneration. Also, much may be learned on how fire can be used in the management of deer browse.

Around water impoundments 1,480 acres were burned of 2,200 acres approved. These burns were aimed at increasing the desirable nesting cover for waterfowl. Burning on a regular rotational basis will keep these areas in establishing suitable cover type for waterfowl nesting.

On the upland areas, 1,180 acres were burned of the 1,340 acres which were approved. By opening up these upland areas we are hoping to maintain and eventually increase the sharp-tailed grouse population. These areas are also beneficial to other upland game species.

Of the 680 acres approved for forest management, 665 acres were burned. On these areas fire was used to knock the slash down left after logging and to reduce wild fire danger. At the same time we hoped to increase the jack pine regeneration by releasing the seed from the cones.

This year we made our first attempt at fall burning. During the months of October and November 6 fires were started and a total of 672 acres were burned. With the successfulness of these fall burns we are now able to incorporate two burning seasons in our prescribed burning plans. The burns were very hot and this was what was needed to knock down all the slash in these newly cut areas.

The 1967 acreage burned was double that of the previous year. We are still hoping to increase this acreage. With the construction of new fire breaks it is going to be possible to burn between 4,000 and 5,000 acres a year. The limiting factor in our burning program in the past has been the limited number of good burning days. Now with more fire breaks it is possible to burn at other times of the year.

The previous burns are improving the ecology of many areas on the refuge. This year there was a large crop of blueberries on two sites which had been burned two years ago.

Refer to the next page for costs and fire weather data

1967 Fire Weather and Costs for Controlled Burns

Date	Area Burned	Acreage Burned	Temperature	Spread Index	Buildup Index	Relative Humidity	Wind	Labor Costs	Equipment Costs	Total Costs	Cost/Acre
3-31-67	FM	25	60	22	8	43	SW-10	$57.00	$ 3.00	$ 60.00	$ 2.40
4-3-67	1	140	45	30	11	23	NW-14	44.00	2.00	46.00	.33
4-5-67	5	80	50	20	13	45	E-10	54.00	3.00	57.00	.71
4-7-67	FM	640	56	18	9	34	SW-4	101.00	12.00	113.00	.18
4-10-67	9	20	46	12	13	52	N-4	13.00	2.00	15.00	.75
4-10-67	9	20	46	12	13	52	N-6	20.00	4.00	24.00	1.20
4-11-67	5	900	48	23	16	26	SE-6	86.00	6.00	92.00	.10
4-12-67	10	200	46	18	18	59	SE-6	61.00	5.00	66.00	.33
4-24-67	10	800	45	20	23	35	NW-6	116.00	13.00	129.00	.16
10-19-67	2	75	50	14	26	39	SW-2	38.00	2.50	40.50	.54
11-3-67	2	20	41	21	9	46	NW-15	20.00	2.00	22.00	1.10
11-7-67	P1*	2	36	12	17	48	SW-6	18.00	5.50	23.50	11.75
11-9-67	2	95	51	12	21	52	SW-4	50.00	1.00	51.00	.54
11-14-67	2	240	41	24	29	55	N-18	34.00	3.00	37.00	.15
11-15-67	2	240	29	18	30	35	SW-8	38.00	2.50	40.50	.17
		3,497						$750.00	$66.50	$816.50	

Average cost/acre burned = $0.23

Average cost, burns over 50 acres $0.20/acre
Average cost, burns under 50 acres $1.66/acre

*Experimental burn in red pine plantation

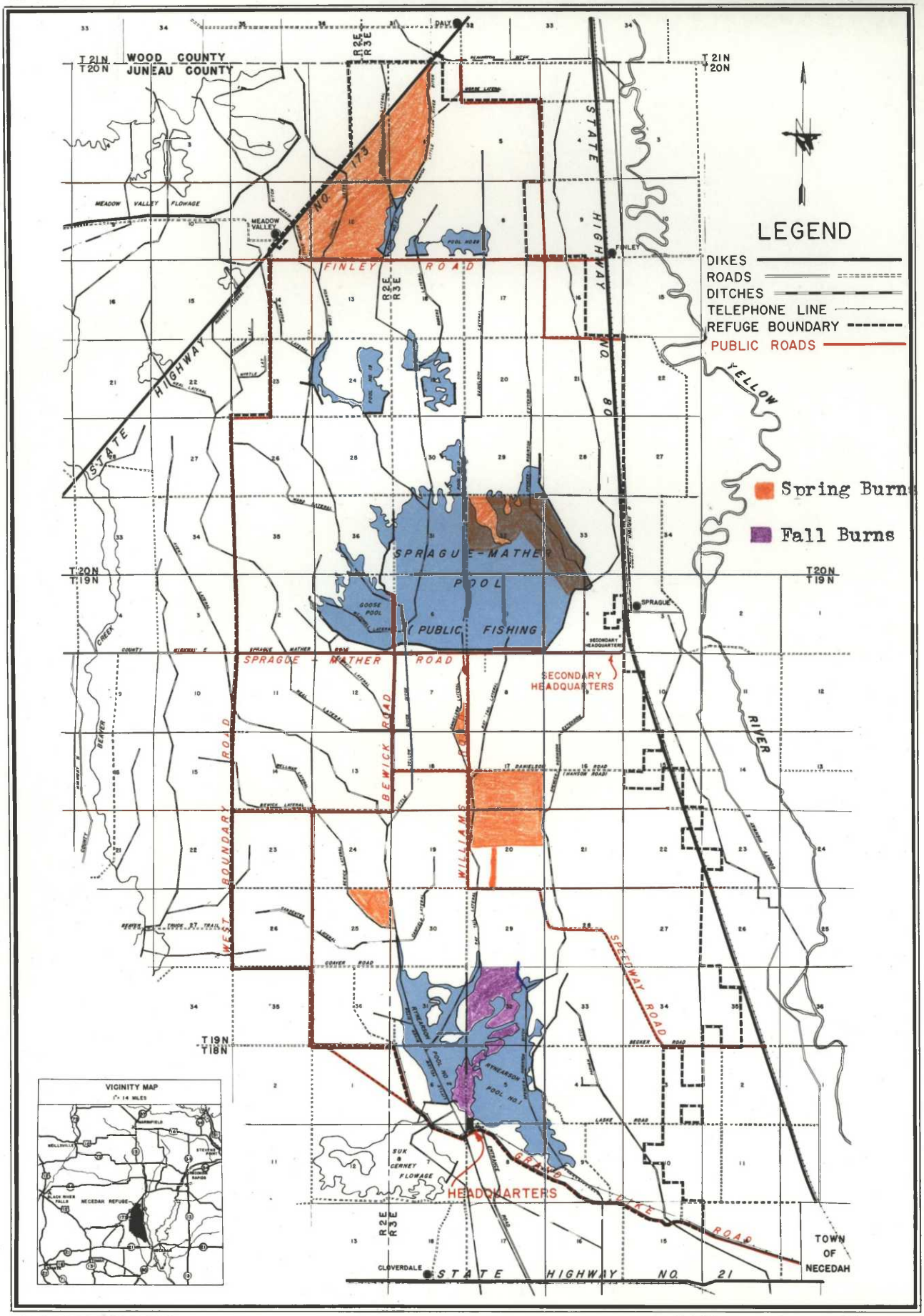
Equipment cost is operating expense and does not include depreciation.

NECEDAH NATIONAL WILDLIFE REFUGE

JUNEAU COUNTY, WISCONSIN

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED IN THE BRANCH OF ENGINEERING

MINNEAPOLIS, MINNESOTA JANUARY, 1960

FOURTH PRINCIPAL MERIDIAN

Scale

TOWNSHIP DIAGRAM

MEAN DECLINATION 1960

3R WIS. 274 409

F. Fires

No fires occurred on the refuge this year. The fire danger on the refuge never reached extreme. The reason for this was the amount and the timeliness of precipitation and unusually low temperatures.

IV RESOURCE MANAGEMENT

A. Grazing

For the second consecutive year no grazing occurred on the refuge. As each year passes there are less cattle in this area. The forage on the grazing units is of poor quality but we cannot interest any farmer to graze cattle even at our low rate of 20¢ per AUM.

B. Haying

Three haying permits were issued this year. A total of 128.85 tons of improved hay was removed from 121 acres bringin in $343.92. The cuttings were from fields that were seeded during 1966 to provide goose pasture. The cuttings resulted in higher quality forage for fall goose browsing. The quality of the hay remcved was about average. Abnormally heavy precipitation in June flooded portions of the hay units and smartweed and some sedges germinated to reduce the quality of the hay.

C. Fur Harvest

The 1967 beaver season opened on February 6th and continued through March 7, 1967. The limit was 10 beaver per trapper. Two trapping permits were issued initially but the trappers had difficulty in getting the beaver to come to their sets. Three additional permits were issued and when the season closed only 20 beaver had been caught. There was about a foot and a half of snow on the level and the Town Board would not spend funds to plow out the town roads so the trappers did experience difficulty in getting around to look at their traps.

Two trapping permits were issued in the fall of 1967 for the removal of furbearers. The season on muskrat and mink was from November 4th through December 31. The raccoon season from October 21 thru January 31, 1968. Two hundred twelve muskrats were taken, 14 mink and 51 raccoon. The refuge had not sold it's share of the pelts as of December 31st.

D. Timber Removal

Ten pulpwood permits were in force during 1967 and 4,225.26 cords were harvested. Total revenue amounted to $30,428.22. The table below gives the cordage removed by species and the average price received:

Species	Cords	Average Price/Cord
Jack pine	2,279.00	$ 6.29
Red pine	154.26	4.50
Oak	1,549.00	.87
Aspen and Birch	243.00	1.00

As of December 31, 1967, 4 permits were still in effect. A complete summary of all wood harvested is included on NR-11 Form.

The majority of our timber sales this year were sold on a lump sum basis. Using this procedure much time was saved because it eliminated scaling and fewer billings were needed.

This year we had the first in a series of commercial thinnings. The thinnings were done to open up the plantation and rid the plantation of dead, dying, and supressed trees and to help control an Ips bettle (Ips pini) outbreak.

This year the Forest Management Plan Guide was written. This guide forms the stepping stone to the Forest Land Use Cards which are the backbone in the land management of this refuge.

E. Commercial Fishing - None

F. Other Uses

Again this year Joe Haske of New Lisbon, Wisconsin established an apiary on the refuge next to the Canfield agricultural units. A charge of 10¢ per hive for 20 hives netted the Bureau $2.00. The bees are helpful to improve buckwheat pollination.

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Banding General

Banding operations this year resulted in 1,301 birds banded. Below is the breakdown by species:

Mallard	869
Wood duck	231
Black duck	45
Canada goose	4
Pintail	3
Black/Mallard cross	2
Green-winged teal	1
	1,155
Dove	146
Grand Total:	1,301

Two sets of CTI recoilless cannons and two 60'x30' fringed hold-down nets were purchased for waterfowl banding this fall. Use of this equipment facilitated banding operations and birds were released in much better condition than in previous years. All banding was done pre-season.

B. Wood Duck Banding

This year was the first year that wood duck trapping was done exclusively with cannon nets. Of a pre-season quota of 250, 231 were trapped and banded. An additional 16 recoveries and returns were obtained. Total wood ducks banded at Necedah to date is 3,413.

Cannon netting on the Sprague and Rynearson 1 banding sites resulted in mixed catches of mallards and wood ducks. A high of 100 wood ducks were banded in one catch along with 173 other ducks on Rynearson 1.

The sex ratio continues to run heavy to males, particularly to adults. It appeared that there was a higher proportion of females in the catches toward the end of the banding season possibly indicating a more favorable time for trapping females.

Eagles and raccoons on the Rynearson 1 banding site made banders bitter more than once. For some time raccoons took up 3/4's of the site and as many as seven eagles fed on nearby flats, periodically testing the wariness of hungry ducks. Banding costs were considerably reduced again this year with wood ducks costing about .90¢ apiece.

The following table shows the wood duck banding accomplishments for the past 5 years:

	Adult		Immature		Local		Total
	M	F	M	F	M	F	
1963	635	185	34	30	3	2	889
1964	236	49	35	22	1	3	346
1965	78	27	10	15	3	2	135
1966	179	33	42	19	3	2	278
1967	93	27	76	35	-	-	231

No new summary of wood duck recoveries has been made since last years narrative.

C. Canada Goose Banding

Only 4 Canada geese were banded this year, all during summer drive trapping operations on Rynearson 2. Attempts to band migrant geese this fall were fruitless as the birds would have nothing to do with either of 3 active sites. The sites were kept baited into November.

In view of Necedah's attempts to increase goose production, a close check of band recoveries was made. Records show that of 14 recoveries from 55 summer bandings (prior to Sept. 1) in 1961 and 1963, all have been from the same general area north of Burlington, Iowa. These 14 recoveries are scattered throughout the period 1961 - 1966.

From the remaining 3,403 bandings only 14 recoveries are from Iowa, most of which are considerable distances from Burlington. This suggests a different migration pattern and harvest area for local and fall migrant geese.

The manager of the Louisa Unit of Mark Twain Refuge near Burlington reported the early arrival of a small number of large Canadas which could be Necedah's birds. These early arrivals would disprove early beliefs that Necedah's local flock was limited by high hunter harvest in the Necedah area. Much of this is speculation and additional recoveries are needed to substantiate previous findings.

The cumulative total of Canada geese banded at Necedah is 3,462. As of November 27, 1967, 630 recoveries (18.2%) were received. Mortality accounted for 529 or 15.3%. Illinois and Wisconsin, representing 46.0% and 27.1%, respectively, of the total, are the main recovery areas. Since the 1965 summary, Wisconsin recoveries have decreased while Illinois and Canada's have increased. The Horicon NWR area continues to account for a comparable rate of Wisconsin recoveries, 59 or 34.5%.

D. Mallard Banding

A total of 869 mallards were banded pre-season from a quota of 1,000. The birds accepted all three banding sites early and four shots were made resulting in catches of over 150 mallards.

Four shots were made in-season to capture mallard drakes for continuation of the Bureau's Frost Mallard Release Project. About 650 ducks (600 mallards) were trapped to obtain 306 drakes for propagation purposes.

In addition, 52 returns and recoveries were obtained and 45 release mallards were re-captured. The acceptance of the banding sites by ducks, particularly Rynearson 1, may have been a factor in deterring goose use of the sites.

The cumulative total of mallards banded at Necedah is 2,968. The following table shows banding data for the past 2 years:

	Adult		Immature		Local		Unknown	Total
	M	F	M	F	M	F		
1966	86	114	213	217	11	8	2	651
1967	266	153	258	190	-	-	2	869

No new summary of recovery data was made since November 1966 but Wisconsin continues as the primary harvest area. Numerous reports have come in on 1967 banded birds shot in the Necedah area.

E. Mourning Dove Banding

Dove banding efforts produced the second highest number banded and reduced the cost per dove banded to .85¢ this year. A total of 146 were banded bringing the cumulative total to 664. The reduction in cost was the result of concentrating trapping operations along the Canfield Units in late August. All trapping was done with 1" x 2" weldwire traps using millet for bait.

The concentrated banding effort also resulted in closer checks of traps and reduced predator losses.

Below is a table showing age and sex data for the past 3 years:

	Adult		Immature		Unknown	Total
	M	F	M	F		
1965	145	50	3	0	36	234
1966	71	22	3	3	25	124
1967	92	24	2	0	28	146

Of 15 recoveries to date, there are 4 each from Louisiana and Mississippi, 2 from Florida and 1 each from Texas, North Carolina, Georgia, Alabama, and Mexico.

F. Nest Structure Project

Goose Platforms

This was the second year for a trial of 75 fiberglas goose nesting structures. None of the platforms were used by ducks or geese and there was no use by wood ducks of the attached wood duck boxes. Tree swallows, starlings and purple martins used all but one of the 49 available boxes.

For the second year an attempt was made to imprint young geese to the fiberglas platforms. Two goose nests were raised during late stages of incubation onto platforms placed on the ground. The nests, containing 6 and 5 eggs, both hatched successfully. One platform was elevated on 12 inch legs to imprint the young to height. It will take one or two years to determine the effect of this experiment.

Duck Platforms

Two variations of duck platforms were placed on the Sprague and Rynearson 1 pools and Pools 18, 19, 27 and 28 this winter. Thirty fiberglas and 30 wire platforms are on trial. None of the structures were used this spring. This same structure used in North Dakota has had high acceptance and hatching success.

Nest Boxes

Last year Necedah Boy Scouts helped construct and put up 93 wooden wood duck boxes to bring the refuge total to 129. Thirty six are metal cones which are in their second year of use. A total of 99 were checked during the summer and of the 89 available for duck use, wood ducks used 6 (6.7%), sparrow hawks 2, tree swallows 10, and starlings 35 (39%).

Most of the boxes are located on the Sprague Pool with about one-third of them over water and two-thirds in trees.

Acceptance of the boxes is expected to increase and in the future Necedah should make a significant contribution as a wood duck producer.

G. Bureau Frost Mallard Release Project

In the spring the Bureau embarked on a study to evaluate the release of game farm reared mallards at Necedah and Lacreek Refuge in South Dakota. The mallards were obtained from Jack Frost's Game Farm at Coloma, Wisconsin. The project is intended to evaluate Frost's Environmental Conditioning Method for inducing wildness into game farm birds, which will involve the study of behavior, distribution, survival, reproductivity and morphology. A continuation of the project will include the releases of genetically improved birds at other areas in succeeding years.

A total of 2,882 four week old birds were released at Necedah. Three separate releases were made, on June 5, and 19, and on July 3. Half of the mallards were "conditioned" by Frost's conditioning process and the other half were raised under normal game farm operations. The project called for equal numbers of males and females and one third of the total was color-marked with nasal discs. Orange discs on the "unconditioned" birds and white discs on the "conditioned" ones allowed separation of the birds in the marsh.

Generally there were noticeable differences between the two variations. Conditioned birds were more wary and seemed to survive better in the marsh. Early indications are that mortality was high on these birds but an evaluation of banding data and further study is needed to draw any conclusions.

H. Pothole Development

During the late fall of 1966, 65 potholes were dozed or blasted in upland areas of Rynearson Pools 1 and 2. Fifty-five were dug with a bulldozer and 10 were blasted experimentally using an ammonium nitrate/fuel oil mixture.

To determine if future pothole development is warranted, the areas were checked this spring. Periodic random checks of 53 potholes and an intensive check of 14 above Rynearson 2 showed that better than 40% of the potholes were used by breeding pairs. Of 29 pairs observed, 16 were mallards, 12 were blue-winged teal and 1 shoveler.

Potholes were also used during early summer by ducks and were well utilized by deer and shorebirds. On the basis of these observations future development will be undertaken.

I. Dummy Nest Study

A dummy nest study had been conducted in 1966 and was also run this year with similar results. It had been felt that nest destruction by predators had been high and the results of these studies indicate the assumption was correct.

The study was conducted according to methods outlined by Merrill Hamond and called for placing chicken eggs in representative nesting vegetation and checking 28 days later to determine predator activity, regarding egg destruction. The study was conducted in two phases, the first corresponding to the primary waterfowl nesting season and the second corresponding to the renesting period. 200 eggs were placed for each phase. Following is a brief summary of the eggs destroyed:

1966		1967	
Phase 1	Phase 2	Phase 1	Phase 2
86%	47.5%	95%	66%

Based on these results it is planned to initiate a predator control program during the nesting season of 1968 and to continue the dummy nest study and document any changes. Hopefully results of the predator control will also be reflected in increased waterfowl production on the refuge.

VI PUBLIC RELATIONS

A. Recreational Uses

Recreational use of the refuge is varied but hunting continues to attract the largest number of visitors. Sight-seeing which includes wildlife observation, and fishing provides the bulk of the remaining recreational use. Most public use occurred during the period April through December with the largest number of visits in the months of September, November and December. These high months correspond to the openings of the three refuge deer seasons.

Blueberry pickers had one of the best berry years in five years. Frost hit some of the patches but many escaped the frost and produced bumper crops. The best patches were found where the timber was recently removed and a control burn occurred a year ago. One picker bucketed 5 quarts in 45 minutes and many were walking 1½ miles into the better patches.

Summer and winter fishing is allowed on 500 acres of the Sprague Pool where the use does not conflict with waterfowl use. Last winter water levels were down and some winter kill occurred. To replenish the Sprague Pool, 470 northern pike were transplanted from below the Rynearson 2 control structure by the WCD. As a result summer fishing was at times rewarding, particularly in September when a 34 incher was reported caught. Most of the fish caught are in the 15 - 22 inch category. Winter fishing, open from December 15 through March 15, provided limited success. Better fishing is expected 3 years from now provided winter water levels can be maintained on the pool.

Sight-seers or wildlife observers provide the second highest number of visitors. These recreationists drive the many miles of public roads to catch a glimpse of a wild turkey or deer, or walk along the pool areas to see concentrations of waterfowl and sandhill cranes. During the fall the Bewick Trail between the Sprague and Goose Pools attracts many people who wish to see large numbers of waterfowl.

Hunting accounts for over 75% of the public use-days on the refuge. Annually thousands of deer hunters are attracted to the area for each of the three refuge deer seasons. Necedah is particularly renown for its bowhunting and hunters consistently kill large numbers of deer. Nearly 12,000 visits were recorded by deer hunters with an additional 1,000 visits made by turkey hunters. Wisconsin's second successive spring season was a success as many hunters were happy to have the opportunity to pursue this wily bird. About 40% of the refuge was open for the season.

Although not held on refuge land, the Necedah Bow Shoot is closely tied to the refuge because of the attraction the refuge has to the bowhunter. The event is held annually by the Wisconsin Bowhunters Association prior to the opening of the early bow season. About 2,000 attended again this year. Some took advantage of the refuge tours conducted during the weekend event. The shoot is presently held on Bureau-owned, State managed lands south of the refuge headquarters.

Refuge conducted tours, picnicking and photography make up the remainder of recreational use at Necedah.

B. Refuge Visitors

Date	Name and Organization	Purpose
1/24	Marshall Stinnett, USGMA, Madison, Wis.	Violation cases
2/13	Marshall Stinnett, " "	"
3/14	Dr. Wm. E. Green, BSFW, Winona, Minn.	Frost Mallard Release
	Herb Dill, Staff Spec. R.O. Mpls. Minn.	"
	Forrest Lee, NPWRC, Jamestown, No. Dak.	"
	Marshall Stinnett, USGMA, Madison	"
	Richard Hunt, WCD, Horicon	"
	Clarence Smith, WCD, Meadow Valley	"
	Jack Frost, Coloma, Wis.	2
3/16	T. Fisher, USFS, Medford, Wis.	Pick up flax straw
3/17	Wm. Aultfather, BSFW, Reg. Forester	Timber mgmt.
3/17	Julian Hitchinson, Camp McCoy, Wis.	Game & Fish Mgmt
	A. N. Schantz, "	"
3/28	Herb Dill, BSFW, Mpls. Minn.	Mallard release project
	Dr. Wm. E. Green, BSFW, Winona, Minn	"
	Dr. Dan Trainer, U. of Wis. Madison, Wis.	"
	Jim Marsh "	"
	Richard Hunt, WCD, Horicon, Wis.	"
3/28	Edgar Klien, WCD, Wis. Dells, Wis.	Fish management
3/29	Carl Pospichal, Mgr. Rice Lake, Minn.	Courtesy call
4/3	John Winship, Pilot-Biol. Mpls. Minn.	Aerial photos
	Don Reily, Photographer, Mpls. Minn.	"
4/17	C. D. Swanson, M&E, Mpls. Minn.	Equipment pickup
	Marshall Stinnett, USGMA, Madison, Wis.	"
4/22	Roger Priest, USGMA, Eau Claire, Wis.	Turkey season patrol
	Marshall Stinnett, USGMA, Madison, Wis.	"
4/25	Robert Dries, WCD, Black River Falls, Wis	Turkey mgmt.
	Jim Hale, WCD, Madison, Wis.	"
4/26	J. R. Smith, WCD, Game Mgmt. Madison	Tour of refuge
	Robert Dries, WCD, " Black River	"
4/27	Edward Mikula, Mich. Cons. Dept., Lansing	"
	Larry Jahn, Wildlife Mgmt. Institute	"
4/27	Lloyd Lindvall, USGMA, Oshkosh, Wis.	Courtesy call
5/9	Sid Hovde, WCD, Dist. Forester, Mauston	Mutual problems
5/9-12	John Winship, Pilot-Biol. Mpls. Minn.	Breeding pair count and photos

Date	Name and Organization	Purpose
5/23	Ray Saxby, 4-H Club Agent, Mauston, Wis.	Arrange for tour
6/5	Herb Dill, BSFW, Staff Spec. R.O. Mpls.	Mallard release project
	Dr. Wm. E. Green, BSFW, Winona, Minn.	"
	Milton Friend, U. of Wis. Madison, Wis.	Duck disease studies
6/26	Dr. Wm. E. Green, BSFW, Winona, Minn.	Wildlife Inventory Plans
7/10	Herb Dill, BSFW, Staff Spec. R.O. Mpls.	Mallard Release project
7/28	George Swanson, NPWRC, Jamestown, No. Dak.	Limnology
8/1	Wm. Aultfather, BSFW, Reg. Forester, Mpls	Timber mgmt.
8/2	Al Wagner, BSFW, Eng. R.O. Mpls	Tower construction
8/2	James Mohler, USFW, Washburn, Wis.	Timber mgmt.
	William Byers, USFW, Park Falls, Wis.	"
	Howard Sheldon, USFW, Park Falls, Wis.	"
8/2	Milt Friend, U. of Wis. Madison, Wis.	Duck disease studies
8/3	Lewis Hamilton, U.S. Geo. Survey, Madison	Water mgmt.
8/18	Milt Friend, U. of Wis. Madison, Wis.	Duck disease studies
	Steve Palmer, " "	"
8/18	Don Ambrosen, Mgr. Back Bay Ref., Va.	Tour of refuge
8/31	Dr. Wm. E. Green, BSFW, Winona, Minn.	Mutual problems
9/6	Steve Ryan, U.S. Forest Service	Ips disease
9/14	Al Wagner, BSFW, Eng. Mpls. Minn.	Tower construction
10/6	Don Burcalow, Minn. Div. of G & F	Tour of refuge
	Jim Coyner, BSFW, Fed. Aid Div. Mpls	"
	Gene Ruhr, " " "	"
10/12	R. Fielding, Ass't Reg. Dir. Mpls. Minn.	Inspection
	Forrest Carpenter, Reg. Refuge Supv. "	"
10/16	John Tobler, Badger Ord. Works, Baraboo	Wildlife mgmt plans
10/22	Andrew Meyer, Ass't Reg. Dir. Mpls. Minn.	Visit
10/27	Al Wagner, BSFW, Eng. Mpls. Minn.	Tower construction
11/22	Dr. Wm. E. Green, BSFW, Winona, Minn.	Mallard releases
12/4	Al Wagner, BSFW, Eng. Mpls. Minn.	Tower construction
12/11	John Edward, Div. Natural Resources	Well inspection

The following made frequent calls at the refuge:

Roger Priest, USGMA, Eau Claire, Wis., assisting with mallard releases
Lloyd, Lindvall, USGMA, Oshkosh, Wis., " "

Jack Frost, Game Farm Breeder, Coloma, Wis., supplied mallard ducklings

Clarence Smith, local WCD Game Manager at Meadow Valley

Ron Kubisiak, local WCD Warden
Calvin Clark, WCD Warden, Tomah, Wisconsin

C. Refuge Participation

1/3-6 Collins and Lipke to Northern Prairie Wildlife Research Center, Jamestown, North Dakota to discuss artificial nest structure study.

1/16 Collins to Mauston for law enforcement session.

1/19 Collins talked to Elroy Lions Club

1/24 Collins to Minneapolis to attend Canada goose meeting

1/27 Gritman talked to Tomah 6th Grade students

1/30 Collins to Mauston to attend turkey management meeting by WCD

2/12-24 Gritman to Fire Behavior School, Denver, Colorado

2/22 Collins to Horicon State Area to discuss goose management

2/27 Collins to Tamarac refuge to deliver duck nesting structures

3/14 Attend meeting at refuge headquarters with Bureau and State personnel on mallard release project, refuge staff participated.

3/17 Lipke gave talks and showed slides to 920 6th thru 9th grade school students at Tomah, Wisconsin

3/20 Collins, Lipke and Rudolph attended goose management meeting in Necedah conducted by WCD

3/22 Rudolph gave slide talk to Mather PTA Group

3/29 Lipke gave talk on conservation careers at Sparta High School

3/28 Rudolph on slide talk to 40 Mather grade school students

5/14 Renaker gave tour to Mauston Presbyterian Sr. High Students

6/22 Lipke gave tour to LaFarge School students

6/26 Gritman gave tour to 4-H Group Award Winners and Leaders

9/2 Lennartson and Lipke gave tours for Necedah Bowshoot participants

9/13 Lipke gave tour for Necedah High School Biology class

9/20 Collins presented paper on deer management on the Necedah NWR to Great Lakes Deer Group at Stevens Point, Wis.

10/16 Lipke gave tour to John Tobler, of Badger Ordnance Works

10/16 Lennartson on tour and field trip for Martin Luther Home personnel of Stoughton, Wis.

10/19 Lennartson gave tour to LaFarge High School Students

10/21 Carter gave tour to LaCrosse Audubon Society

10/23 Lipke and Lennartson talk and slides to Kendall Lions Club

10/25 Lennartson tour with New Lisbon Cub Scouts

10/27 Brown and Lipke talk and slides to New Lisbon Rod & Gun Club

11/16 Lipke attended career development meeting - Job Corps at regional office in Minneapolis

12/4-8 Lennartson attended forestry workshop at Crab Orchard NWR

12/13 Brown and Lipke attended Midwest Fish and Wildlife Conference at Madison, Wisconsin

D. Hunting

Deer

Three refuge hunting seasons for deer were held during 1967. These consisted of an early bow season (9/23-11/12), gun season (11/18-11/26), and late bow season (12/2-12/31). Bow seasons were for either sex deer while the gun season was for bucks only with a number of quota (either sex permits) issued. An estimated 11,685 hunters participated in these seasons and killed 340 deer. This represents a decrease in hunter numbers and deer taken compared with 1966 when 14,180 hunters took an estimated 620 animals.

Opening day of the late bow season continued to be the most popular hunt and based on car counts, 5,000 hunters were on hand for it this year. They took 184 deer. In spite of the large number of hunters concentrated in the area open for the late bow season, little trouble was experienced and this was a sportsmanlike group of hunters. Gun hunters again killed a considerable number of illegal does. There were numerous reports of does lying dead in the woods and 5 were found just in the vicinity of refuge headquarters.

Turkey

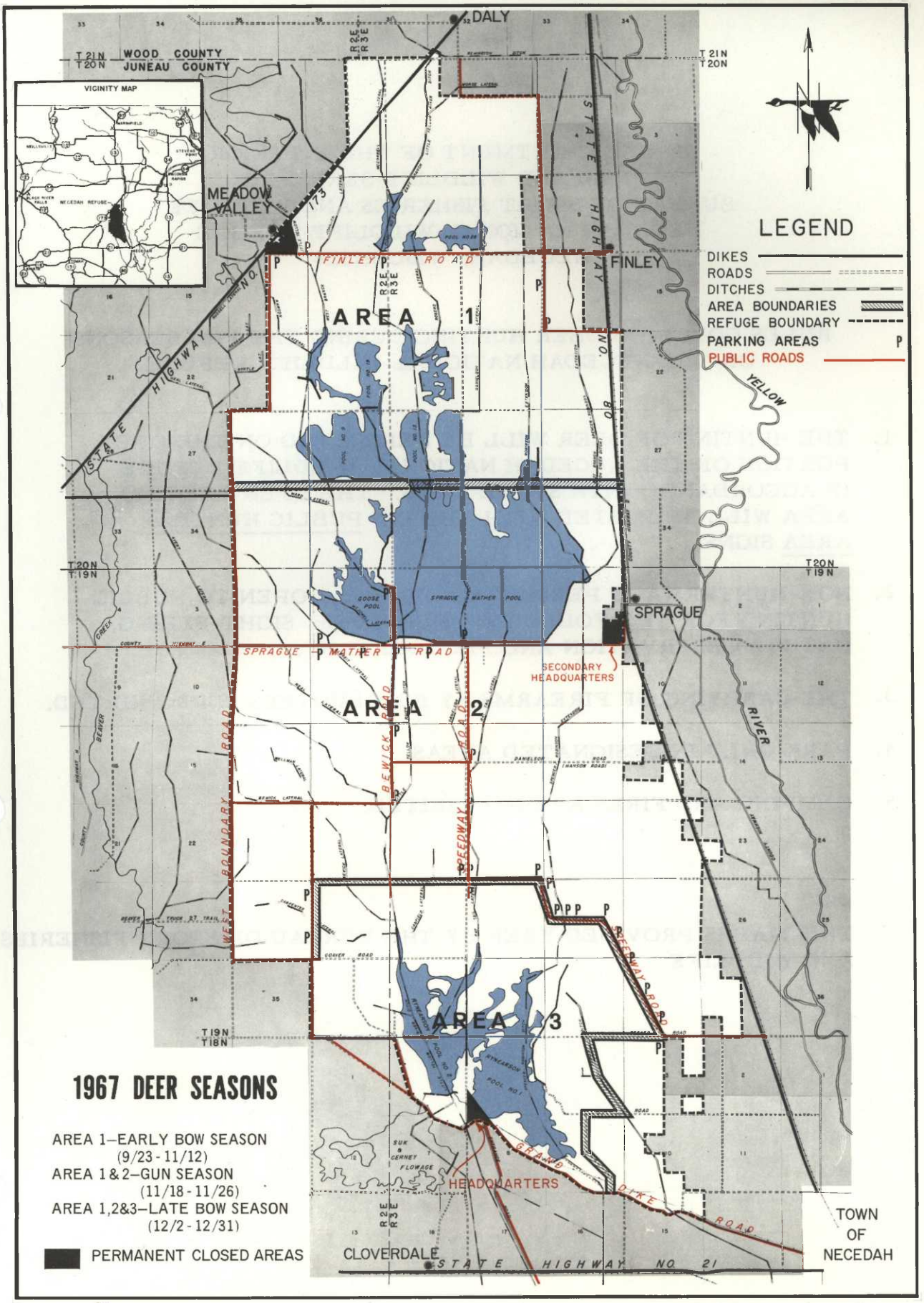
A spring turkey hunt was held on the refuge and adjoining State-managed land for the first time in 1966 and was again held in 1967. This hunt was on a permit basis with the permits being issued by Wisconsin Conservation Department. The season was for gobblers only and ran from April 22 through May 11. Use of the permit system limited the hunter density to 2 - 3 per square mile to insure a quality type of hunting. A total of 1,100 hunter visits were made and 8 gobblers were taken on the refuge from a flock that numbers approximately 400. Areas around impoundments were closed to hunting to create as little disturbance as possible to nesting waterfowl.

NECEDAH NATIONAL WILDLIFE REFUGE

JUNEAU COUNTY, WISCONSIN

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



LEGEND

- DIKES
- ROADS
- DITCHES
- AREA BOUNDARIES
- REFUGE BOUNDARY
- PARKING AREAS P
- PUBLIC ROADS

1967 DEER SEASONS

AREA 1—EARLY BOW SEASON
(9/23 - 11/12)
AREA 1 & 2—GUN SEASON
(11/18 - 11/26)
AREA 1,2&3—LATE BOW SEASON
(12/2 - 12/31)

PERMANENT CLOSED AREAS

COMPILED IN THE BRANCH OF ENGINEERING

MINNEAPOLIS, MINNESOTA JANUARY, 1960

FOURTH PRINCIPAL MERIDIAN

Scale

TOWNSHIP DIAGRAM

MEAN DECLINATION 1960

3R WIS. 274 409

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
NECEDAH NATIONAL WILDLIFE REFUGE
NECEDAH, WISCONSIN

RULES COVERING DEER HUNTING DURING THE 1967 SEASONS ON THE NECEDAH NATIONAL WILDLIFE REFUGE

1. THE HUNTING OF DEER WILL BE PERMITTED ON THE OPEN PORTION OF THE NECEDAH NATIONAL WILDLIFE REFUGE IN ACCORDANCE WITH STATE LAWS. THE OPEN HUNTING AREA WILL BE POSTED WITH GREEN PUBLIC HUNTING AREA SIGNS.

2. NON-HUNTERS ARE PERMITTED ON AREAS OPEN TO PUBLIC HUNTING FOR THE FOLLOWING PURPOSES: SIGHT-SEEING, NATURE OBSERVATION AND PHOTOGRAPHY.

3. THE CARRYING OF FIREARMS BY BOW HUNTERS IS PROHIBITED.

4. PARK ONLY IN DESIGNATED AREAS.

5. CAMPING AND FIRES ARE PROHIBITED.

THIS MAP IS PROVIDED FREE BY THE BUREAU OF SPORT FISHERIES AND WILDLIFE

Waterfowl

The 1967 goose season for this part of Wisconsin ran from October 7 through December 15. This was the first year a tagging system was initiated for Canada geese and hunters in this part of the state were each allowed two tags. The entire state was allowed a quota of 20,000 geese.

Waterfowl hunting is not permitted on the Necedah Refuge and the states manages most of the 60,000 acre Meadow Valley Wildlife Area adjoining the refuge as a public hunting area. The "firing line" immediately south of the refuge boundary was again the most "popular" goose hunting area and 7,077 hunters took 891 geese here during the season. Estimated goose kill on the Meadow Valley Flowage was 217 and on neighboring farms was 235 for a total harvest of 1,343 in the Necedah area. These figures are without crippling loss which we feel is quite high as a result of the firing line type of hunting. This years harvest figures represent a considerable increase over last years when 230 were killed during the short $2\frac{1}{2}$ day season.

The main enforcement problem regarding the new tagging system was that the tags were made of light cardboard. Unfortunately we had heavy rains on opening weekend and many of the tags simply fell apart. Tags used in the future will need to be made with a more durable material as some hunters will use this as an excuse for not using them.

The duck season opened on October 7th and continued through November 15. The numerous rivers in this area and large flowages on the Wisconsin River provide good hunting opportunities. Hunting success in the river bottoms was below average due to a lack of mast from late spring frosts. The fall migration was gradual through this area and the season could be defined as about average.

E. Violations

Excellent enforcement cooperation was received from local wardens of the Wisconsin Department during 1967.

U. S. Commissioner William Fields, Madison, Wisconsin handled two cases involving travel on unauthorized roads during the 1966 deer season and three violations during the 1967 turkey season on May 31. Defendants were fined $35.00.

Refuge personnel assisted WCD wardens on five of 20 violations during the deer seasons, mostly for hunting in closed areas. These cases were handled in Juneau County Court, Mauston, Wisconsin. Fines averaged about $25.00 each.

Staff members also assisted state wardens on several waterfowl violations which were handled in county court.

F. Safety

Monthly safety meetings were held on the following subjects:

Workmens Compensation	Water Safety
Home Accidents	Woods Safety
Shop Safety	Firearm Safety
Artificial Resucitation	Driving Habits
Lawn Mower & Small Equipment	Cold Weather Dangers
Proper Use of Power Hand Tools	Review of Safety Program

Only one accident occurred during 1967 involving an employee for the Ryd Construction on construction of an observation tower near refuge headquarters. The employee injured a finger when placing decking. There was no lost time. The accident could have been prevented if extra help would have been available to handle the heavy plank.

Measures taken to prevent hazardous conditions are as follows:

Installed an overhead "I" beam in the shop to facilitate lifting.

Headquarters granary, paint shop and secondary excess property storage stall were cleaned out and re-arranged making it a safer place to work.

Constructed brush guard for D-7 tractor

With no lost time accidents during 1967, our record now reads 443 days since our last lost time accident.

It is planned to continue monthly safety meetings during 1968, review the Woods Worker Safety Plan and review safety material furnished by the regional safety committee.

Imunivy was purchased and taken by those employees who have occasion to work near poison ivy.

VII OTHER ITEMS

A. Items of Interest

Jim Lennartson reported for duty as forester during June. Jim graduated from the University of Minnesota in June and we are happy to have him on our staff. He is currently spending about half of his time on forest inventory work on the Upper Mississippi Refuge.

Jim Gritman, our refuge forester for the past three and one-half years accepted a transfer as forester in the Division of Wildlife Refuges in the Central Office on September 1, 1967. Jim always came up with a lot of good ideas. We wish him success in his new job.

Edward J. Collins, after being at Necedah for over three years, transferred to the Columbia NWR, Othello, Washington on October 5th. When reading the circulating narratives from the western refuges, Ed would remark that some day he was going to manage one of those areas. We are sure Ed is happy and wish him success too.

On October 23rd, David J. Brown arrived to take over as Refuge Manager. Dave came from Kootenai NWR, Bonners Ferry, Idaho. Being a native of Wisconsin, Dave is glad to be back "home" and is happy to have the opportunity to manage this refuge.

B. Photographs

The photographer's name is listed under each photo

Credits: Brown: I-B; III-D,F; V-I; VI-D

Lipke: II; III-B; V-A,B,C,D,E,F,G,H; VI-A

Lennartson: III-A-E; IV-D

Rudolph: I-A; IV-A,B,C,F; VI-B,C,E,F; VII
Typing, photo mounting and assembly

SIGNATURE PAGE

Submitted by:

David J. Brown
(Signature)

David J. Brown

Date: February 5, 1968

Refuge Manager
Title

Approved, Regional Office:

Date: FEB 9 1968

Lester A. Klundson
(Signature)

Acting Asst.
Regional Refuge Supervisor

3-1750
Form NR-1
(Rev. Marc[illegible]1953)

WATERFOWL

REFUGE Necedah

MONTHS OF January 1 TO April 30, 19 67

(1) Species	Weeks of reporting period (2)									
	1/1 1 - 7	1/8 2 - 14	1/15 3 - 21	1/22 4 - 28	1/29 5 - 2/4	2/5 6 - 11	2/12 7 - 18	2/19 8 - 25	2/26 9 - 3/4	3/5 10 - 11
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

Int. Dup. Sec., Wash., D.C. 37944

3-1750
Form NR-1
(Rev. Marc 1953)

WATERFOWL

REFUGE Necedah MONTHS OF May 1 TO August 31, 19 67

(1) Species	Weeks of reporting period (2) 5/1-6	5/7-13	5/14-20	5/21-27	5/28-6/3	6/4-10	6/11-17	6/18-24	6/25-7/1	7/2-8
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling		3								
Trumpeter										
Geese:										
Canada	420	270	140	140	150	150	150	150	150	150
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	800	800	800	800	850	950	950	950	950	950
Black	40	40	40	40	40	80	80	80	80	80
Gadwall										
Baldpate	30	25	25	25	25	25	25	25	25	25
Pintail	50									
Green-winged teal	100	100	100	100	100	100	100	100	100	100
Blue-winged teal	650	650	650	650	650	650	650	650	650	650
Cinnamon teal										
Shoveler	25	20	20	20	20	20	20	20	20	20
Wood	150	200	200	200	350	625	625	625	625	625
Redhead	10									
Ring-necked	125	75	25	25	25	25	25	25	25	25
Canvasback	5									
Scaup	175	150	50	50	40	40	40	40	40	40
Goldeneye	10									
Bufflehead	25									
Ruddy										
Other Hooded Merganser	50	50	50	50	50	85	85	85	85	85
Coot:	275	150	90	90	90	90	90	90	90	90

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cont. NF 1
(Rev. M[illegible]ch 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Necedah MONTHS OF May 1 TO August 31, 1967

(1) Species	(2) Weeks of reporting period: 7/9-15 (11)	7/16-22 (12)	7/23-29 (13)	8/5 (14)	8/6-12 (15)	8/13-19 (16)	8/26 (17)	8/27-31 (18)	(3) Estimated waterfowl days use	(4) Production Broods: seen	Estimated total
Swans:											
Whistling									21		
Trumpeter											
Geese:											
Canada	150	150	150	180	180	180	250	250	22,600		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	950	950	1,050	1,050	1,050	1400	1500	1500	123,950		
Black	80	80	80	80	80	150	175	175	10,110		
Gadwall											
Baldpate	25	25	25	25	25	25	25	25	3,105		
Pintail						10	50	50	970		
Green-winged teal	100	100	120	120	120	170	450	450	17,410		
Blue-winged teal	650	650	725	800	800	900	1500	1150	92,775		
Cinnamon teal											
Shoveler	20	20	20	20	20	20	20	20	2,490		
Wood	625	625	625	700	700	850	900	900	69,100		
Redhead									60		
Ring-necked	25	25	25	25	25	25	25	25	4,025		
Canvasback									30		
Scaup	40	40	40	40	40	40	40	40	6,640		
Goldeneye									60		
Bufflehead									150		
Ruddy											
Other Hooded Merganser	85	85	85	85	85	85	85	85	9,265		
Coots:	90	90	100	100	100	100	100	100	13,000		

NOTE: These figures exclude Frost-released Mallards

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	21	3	-
Geese	22,600	420	72
Ducks	340,140	4,770	600
Coots	13,000	275	35

SUMMARY

Principal feeding areas Pymearson Pools 1 & 2, and Sprague Pool; Canfield agricultural units.

Principal nesting areas Upland areas surrounding Pymearson Pools 1 & 2, Sprague & Pools 18, 19, and 27.

Reported by Howard A. Lipke, Assistant Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. Marc' 1953)

WATERFOWL

REFUGE Necedah MONTHS OF September 1 TO December 31 19 67

(1) Species	Weeks of reporting period (2) 1 9/1-2	2 9/3-9	3 9/10-16	4 9/17-23	5 9/24-30	6 10/1-7	7 10/8-14	8 10/15-21	9 10/22-28	10 10/29-11/4
Swans:										
Whistling										9
Trumpeter										
Geese:										
Canada	250	250	300	1,800	3,500	9,300	5,400	4,600	3,950	3,325
Cackling					60	450	300	175	175	125
Brant										
White-fronted										
Snow				5		75	75	80	75	25
Blue				7		125	125	135	125	35
Other										
Ducks:										
Mallard	1,500	1,650	3,000	3,400	3,400	3,400	3,400	8,500	9,500	8,400
Black	175	175	500	550	550	550	550	650	650	450
Gadwall							100	250	525	575
Baldpate	25	80	825	3,250	3,800	5,200	3,000	3,700	2,400	2,850
Pintail	50	50	100	125	250	450	450	700	600	400
Green-winged teal	450	275	250	250	200	200	200	200	200	175
Blue-winged teal	1,150	1,000	750	600	500	250	200	200	150	
Cinnamon teal										
Shoveler	20	20	50				35	175	50	50
Wood	900	1,000	1,000	1,400	1,500	1,000	1,000	750	750	225
Redhead							15	75	75	125
Ring-necked	25	25	125	225	250	450	1,950	2,700	4,400	3,850
Canvasback							5	5	50	60
Scaup	40	40	40						10	10
Goldeneye										
Bufflehead										5
Ruddy						10	10	10	20	20
Other Hooded Merganser	85	85	85	100	100	100	75	75	125	125
Common Merganser										25
Coot:	100	100	700	3,400	4,100	4,400	4,400	5,400	4,400	3,900

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cont. NR-1
(Rev. M h 1953)

WATERFOWL
(Continuation Sheet)

REFUCE Necedah

MONTHS OF September 1 TO December 31, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: seen	(4) Production Broods: Estimated total
	11/5-11 11	11/12-18 12	11/19-25 13	11/26 12/2 14	12/3 12/9 15	12/10 12/16 16	12/17 12/23 17	12/24 12/31 18			
Swans:											
Whistling	49	40							686		
Trumpeter											
Geese:											
Canada	1,000	800	425	50	10	10	10	10	241,790		
Cackling									8,995		
Brant											
White-fronted											
Snow									2,345		
Blue									3,864		
Other											
Ducks:											
Mallard	500	400	200	100	50	50	50	50	324,975		
Black	50	50	25	10	10	10	10	10	33,885		
Gadwall									10,150		
Baldpate	50	50							176,485		
Pintail	5								22,010		
Green-winged teal									14,550		
Blue-winged teal									27,850		
Cinnamon teal											
Shoveler									2,700		
Wood									62,175		
Redhead		25							2,205		
Ring-necked	25	75							98,575		
Canvasback	5	5							910		
Scaup									780		
Goldeneye		25							175		
Bufflehead									35		
Ruddy									490		
Other Hooded Merganser	125	175	30						8,470		
Coots:									215,800		
Common merganser	30	65	25						890		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	686	49	
Geese	256,994	9,950	
Ducks	787,310	19,505	
Coots	215,800	5,400	

SUMMARY

Principal feeding areas Sprague, Goose and Rymearson Pools; Canfield Agricultural Units.

Principal nesting areas

Reported by Howard A. Lipke
Howard A. Lipke

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Necedah Months of January 1 to April 30 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed grebe	2	3/31	50-100		Still present-common					
Horned grebe	2	4/26	10-30		Few still present					
Great blue heron	1	3/26	40-60	Late April	All still present					
Green heron			Few		Still present					
American bittern	2	4/28	Several		Still present					
American egret	1	4/25	1	Late April	1	Late April				
Common loon	1	4/6	3-5	" "	1 or 2	present				
Virginia rail			Several	" "	Still	present				
Sora rail	Heard Late April		Several	" "	Still	present				
Sandhill crane	5	3/25	40	4/9-22	20-	Still present				
II. Shorebirds, Gulls and Terns:										
Killdeer	2	3/24	Many	Late March	Few still present					
Woodcock	Several	3/27	Many	Mid-April	Still present					
Common snipe	2	4/12	"	" "	"	"				
Greater yellowlegs	1	4/26	Several	Late April	"	"				
Ring-billed gull	6	3/30	Few		-	-				
Least sandpiper		Early April			Few present					

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	1	3/25	Many	Late April	100-150	present		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Occasional visitor throughout period						Barred owl	Year-round resident
Duck hawk							Screech owl	"
Horned owl	Common year-round resident						Long-eared owl	"
Magpie							Saw-whet owl	"
Raven								
Crow	Common thru winter							
Bald eagle	Occasional visitor thru early May							
Osprey	3	4/19	Migration	4/19-23	-	-		
Red-tailed hawk		March	Common	April	10-30	Present		
Rough-legged hawk	2	3/29	Common	April	5-15	Present		
Marsh hawk	3	3/23			20-30	Present		
Sparrow hawk		April	Several	Late April	5-15	Present		
Cooper's hawk			Few	Early April	Still present			
Goshawk			"	"				
Red-shouldered hawk	1	3/25	Common	April	Few	Still present		

Reported by Howard A. Lipke

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiforme
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Necedah Months of May 1 to August 31 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed grebe	Summer resident		40-50	Late Aug.	Still present					40 - 50
Horned grebe	Few present during early part of period									
Great blue heron	Summer resident		100-120	Aug	Still present			49	15-20	100 -120
Green heron	"	"	Common		"	"				
American bittern	"	"	"		"	"				
Least bittern	"	"	Few		"	"				
American egret	Occasional visitor		10-15	Early Aug	1	mid-Aug.				10 - 15
Common loon	Summer resident		Few 2-5		Still present					2 - 5
Virginia rail	"	"	Fairly common		Few still present					
Sora rail	"	"	Common	Aug 18-22	"	"	"			
Sandhill crane	"	"	150	Late Aug	All still present				4 - 8	150
II. Shorebirds, Gulls and Terns:										
Killdeer	Summer resident		Common	Early Aug	Some still present					
Woodcock	"	"	"		Still present					
Common snipe	"	"		Early Aug	Some still present					
Greater yellowlegs	"	"	200-300	Late July	"	"	"			
Lesser yellowlegs	"	"	Common	Early Aug	"	"	"			
Spotted sandpiper	"	"	"	"	"	"	"			
Pectoral sandpiper	Occasional		Late July	Early Aug						
Semi-palmated	"		"	"						
Least sandpiper	"		"	"	Still present					
Herring gull	Summer resident		Few							
Black tern	"	"	Common	Early Aug		mid-Aug.				
Common tern	"	"	Fairly common							
Upland plover	"	"	Common		Still present					

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	Summer resident	Very common 300-400	Still present	Trapping ratio 1 adult/0.259 immature	
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl	year-round resident-common				
Magpie					
Raven					
Crow	year-round resident-common				
Bald eagle	Occasional visitor 1 seen early May and late Aug.				
Osprey	" "	1 - 3			
Red-tailed hawk	year-round resident	15-30	All present		
Rough-legged hawk	few throughout period		still present		
Marsh hawk	summer resident	20-30	still present		
Sparrow hawk	" "	30-40	still present	3 known nests	
Cooper's hawk					
Barred owl	year-round resident	common			
Screech owl	" "	"			
Long-eared owl	"	Occasional			
Saw-whet owl	"	"			

Reported by Howard A. Lipke

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiforme
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Necedah Months of Sept. 1 to Dec. 31 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed grebe	Summer	resident	50-100	Sept.	Few thru Oct.					
Great blue heron	"	"	100-120	Sept.	Common thru Oct.					
Green heron	"	"	Fairly common thru September							
American bittern	"	"	Fairly common thru September							
Common loon	"	"	Few present (2-5)							
Virginia rail	"	"	Common in September							
Sora rail	"	"	Common in September							
Sandhill crane	"	"	180	9/10-16	90	early Nov.				
II. Shorebirds, Gulls and Terns:										
Killdeer	Summer	resident	Fairly common thru September							
Woodcock	"	"	Common into early October							
Common snipe	"	"	Common into early October							
Greater yellowlegs	"	"	Common thru September							
Lesser yellowlegs	"	"	Common thru September							
Spotted sandpiper	"	"	Common thru September							
Pectoral sandpiper			Fairly common thru September							
Semi-palmated sandpiper			Fairly common thru September							
Least sandpiper			Fairly common thru September							
Herring gull			Fairly common to early October							
Ring-billed gull			Fairly common to early October							
Common tern			Few present thru September							
Upland plover	Summer	resident	Few present thru September							

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	Summer resident	400-500	early Sept.	mid-Dec.	
White-winged dove					
IV. Predaceous Birds:				Barred owl	Year-round res.-common
Golden eagle	Occasional visitor	2-3	late Oct.	thru Nov.	Screech owl " " "
Duck hawk					Saw-whet owl " " Occasional
Horned owl	Year-round resident	common		still present	Long-eared owl " "
Magpie					Snowy owl Occasional winter visitor (1 on 12/2 and 12/4)
Raven	Occasional fall visitor				
Crow	Year-round resident	common			
Bald eagle	Late Sept. (2)	8-10	late Oct	Occasional - Dec.	
Goshawk		fairly common			
Rough-legged hawk		15-20	Oct-Nov.	Still present	
Red-tailed hawk	Summer resident	20-25	Oct	Still present	
Marsh hawk	" "	Common	thru Nov	late Nov.	
Sparrow hawk	" "	Common	to Nov		
Cooper's hawk	" "	Fairly common			

Reported by Howard A. Lipke

Howard A. Lipke

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiforme
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Necedah — For 12-month period ending August 31, 19 67

Reported by Howard Links — Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3) Use-days	(4) Breeding Population	(5) Production
UNIT 1 Kjnearson 1 and 50% of refuge	Crops	130	Ducks 352,792	200	150
	Upland	8,805	Geese 65,800	10	8
	Marsh	1,500	Swans 540	-	-
	Water	1,000	Coots 127,070	3	5
	Total	11,435	Total 546,202	213	163
UNIT 2 Kjnearson 2 and 50% of refuge	Crops	292	Ducks 211,066	152	120
	Upland	7,188	Geese 171,190	6	20
	Marsh	1,000	Swans 3,845	-	-
	Water	700	Coots 8,125	3	5
	Total	9,180	Total 394,226	161	145
UNIT 3 Sprague-Mather Pool East-West Boundary	Crops	0	Ducks 413,205	240	180
	Upland	4,540	Geese 158,830	12	28
	Marsh	2,000	Swans 400	-	-
	Water	3,000	Coots 92,040	5	15
	Total	9,540	Total 664,475	257	223
UNIT 4 Pools 9, 13, 18, 19, 27,28 and N ½ of refuge	Crops	0	Ducks 120,735	200	150
	Upland	7,052	Geese 10,770	7	16
	Marsh	1,300	Swans 0	-	-
	Water	800	Coots 4,595	4	10
	Total	9,152	Total 136,100	211	176
TOTALS:	Crops	422	Ducks 1,097,798	792	600
	Upland	27,885	Geese 406,590	35	72
	Marsh	5,800	Swans 4,785	-	-
	Water	5,500	Coots 231,830	15	35
	Total	39,607	Total 1,741,003	842	707
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form MR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form NR-2
(April 1[illegible])

UPLAND GAME BIRDS

Refuge Necedah Months of January 1 to April 30, 19 67

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	30,000								decrease.	Decrease in spring drumming activity indicates a slight may have caused decreased activity. Unseasonable cool weather
Sharp-tailed Grouse	10,000								25 - 35	Observations on lone dancing ground indicates slight
									decrease -	3 dancing males, however, 7
									grouse were	seen in the area. Delayed
									spring may	be delaying activity.
Ring-necked Pheasant	1,500								1 - 5	Population limited - no observations were made during
									the period.	Harsh winter may have
									reduced the	population.
Wild Turkey	30,000					8			300 - 400	Birds dispersed from winter feeders in late March. Sub-
									stantial losses	occurred during winter
									as several	carcasses were seen. Spring
									hunt season	resulted in harvest of 21
									birds.	
Bobwhite Quail	5,000								5 - 15	Population limited - no observations were made
									during the	period. Production of last
									year probably	lost due to harsh winter
									conditions.	
Woodcock	12,000									Woodcock survey routes and
									refuge observations	indicate a slight
					(over)				increase in	woodcock numbers.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Necedah Months of May 1 to August 31, 1967

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	30,000									Population on decrease. Very few brood observations made. Unfavorable spring nesting period probably the cause.
Sharp-tailed Grouse	10,000								30 - 50	No brood observations or adult birds seen during the period. Lower production suspected.
Ring-necked Pheasant	1,500								1 - 5	No observations made. Population remains limited.
Bobwhite Quail	5,000								10 - 25	Only few sound observations made. Production limited because of low breeding population.
Wild Turkey	30,000								350 - 450	Population slightly lower. Very few broods seen indicating production way down. Adult birds seen more often in late August.
Woodcock	12,000									Common - production assumed to be near normal although no broods seen. Scattered observations of adults.
Snipe	5,000									Common - numerous during early August particularly on flats of Rynearson 2 and Sprague Pool.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, phesants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Necedah Months of Sept. 1 to Dec. 31, 19 67

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	30,000									Increase in observations over last period, however, population below that of last year. Limited group sightings indicate few broods.
Sharp-tailed Grouse	10,000								30 - 50	One sighting on south end of refuge. Population down from last year.
Ring-necked Pheasant	1,500								1 - 5	No observations - population remains limited.
Bobwhite Quail	5,000								10 - 25	Sound observations indicate limited population, lower than that of last year.
Wild Turkey	30,000								400 - 450	Broods showing late, many with small young. December concentrations appearing near Bewick feeder and on Canfield Units.
Woodcock	12,000									Sightings on and adjacent to refuge indicate normal fall migration. Cold weather in early October shortened stay of birds.
Snipe	5,000									Common - many flock sightings indicate normal migration.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, phesants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Necedan Calendar Year 1967

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed deer	35,000 acres of timber, brush and marsh		340									2,400	1,050	
Black Bear	35,000 acres of timber, brush and marsh		0									1 - 2 Transient use of the refuge.		

Early bow season 4
Gun season 160 (83 variable quota deer)
Late bow season 186
340

Remarks:

Reported by Howard A. Lipke
Howard A. Lipke

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116000

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Macedah Year ending April 30, 1947

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator * Control	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Muskrat				342				T-9959	171	171	171			400-600
Mink				10	1			"	5	5	5		1	100-150
Raccoon				13	11			"	13	0	0		11	500-1000
Skunk														50-100
Otter														40-50
Beaver				20				T-9960	5	0				60
								T-9961	5	0				
								T-9962	0	0				
								T-9963	5	0				
								T-9964	5	0				

Average refuge fur prices:

Mink - 5 @ $8.00 = 40.00
Muskrat - 171 @ .80 = $136.50

* List removals by Predator Animal Hunter

REMARKS:

Reported by Howard A. Lipke

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

3-1755
Form NR-5

DISEASE

Refuge Necedah Year 19 67

Botulism

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Unknown*

Species affected Great blue heron - nestlings

Number Affected

Species	Actual Count	Estimated
Heron	10	35 - 45

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions Normal

Food conditions Normal

Remarks *Young herons were badly decomposed and were not collected. ~~There is the possibility that~~ a hail storm was the cause and not disease.

INT.-DUP., D.C.- 53818-59

NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Necedah

Calendar Year 1967

1. Visits

a. Hunting 12,775 b. Fishing 1,850 c. Miscellaneous 15,900 d. TOTAL VISITS 30,525

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game	1,100	16,000	BSFW
Big Game	11,675	40,000	BSFW
Other			

Number of permanent blinds -

Man-days of bow hunting included above 8,075 visits or 4,038 12 hr. man-days

Estimated man-days of hunting on lands adjacent to refuge 33,000 visits or 8,250 12 hr man-days

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores	500	

1c. Miscellaneous Visits

Recreation 11,650 Official 250

Economic Use 4,000 Industrial

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge NO. OF GROUPS	On Refuge NUMBER IN GROUPS	Off Refuge NO. OF GROUPS	Off Refuge NUMBER IN GROUPS
Sportsmen Clubs	3	90	1	20
Bird and Garden Clubs	1	20		
Schools	4	142	7	1,206
Service Clubs			3	70
Youth Groups	2	68		
Professional-Scientific			1	50
Religious Groups	1	10		
State or Federal Govt.	1	3		
Other	1	1		

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	18	Radio Presentations	
Newspapers (P.R.'s sent to)	7	Exhibits	4
TV Presentations		Est. Exhibit Viewers	

3-1756

(Rev. 4/63)

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Necedah Year 1967

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
NONE								

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

Interior—Duplicating Section, Washington, D. C.

59311

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Necedah County Juneau State Wisconsin

Calendar Year 1967

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./ Tons	Acres	Bu. /Tons			
Buckwheat					55	825 bu	55	Alfalfa	52
Field Corn					42	450 bu	42	Clover	9
Sweet Corn					3		3	Grass mixtures - Bluegrass, red-top, timothy, birdsfoot trefoil, vernal alfalfa, alsike and ladino clover	121
								Fallow Ag. Land.	225

No. of Permittees: Agricultural Operations 0 Haying Operations 3 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue
Alfalfa	37.50	32	131.25
Grass mixtures	91.35	89	212.67
			343.92
Hay - Wild	0		

Grazing	Number Animals	AUM'S	Cash Revenue
1. Cattle	-	-	-
2. Other Apiary	20 hives	@.10¢	2.00

	ACREAGE
1. Total Refuge Acreage Under Cultivation	282
2. Acreage Cultivated as Service Operation	282

DIRECTIONS FOR PREPARING FORM NR--8'
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only thenumber of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvesed column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops Specify the acreage kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting

Total Refuge Acreage Under Cultivation Report total land area devoted to agricultural purposes during the year.

3-1570
NR-8a
(4/54)

REFUGE GRAIN REPORT

Refuge Necedah — Months of Jan. 1 through Dec. 31, 1967

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn, (shelled)	249	225	474			324	324	150		150	
Corn, (seed)	5	1	6		6		6	0			
Buckwheat	338	0	338		45	23	68	270	160	110	
Wheat	30	0	30				0	30		30	
Rye	20	23	43		43		43	0			
Proso Millet	19	4	23		4	9	13	10		10	
Alsike Clover	5	0	5		4		4	1	1		
Oats	15	0	15				0	15	15		
Timothy	12	0	12		2		2	10	10		
Alfalfa	3	1	4		2		2	2	2		
Blue Grass	5	0	5		3		3	2	2		
Birdsfoot Trefoil	0	2	2		2		2	0			
Brome Grass	1	0	1		1		1	0			
Smartweed	4	0	4		4		4	0			

(8) Indicate shipping or collection points

(9) Grain is stored at headquarters and secondary granaries

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DEP. SEC., WASH., D.C. 17065

3-1761
Form NR-11
(2/46)

TIMBER REMOVAL

Refuge Necedah Year 1967

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc. CORDS	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
PERMITS COMPLETED DURING 1967:								
John Becker	64-19	Permit closed out without any additional removal of timber.						
Becker Forest Prod.	67-5	S.3-18N3E	126	718.00	6.27	4,501.86	All merchantable trees	Jack pine
"	67-6	S.32-19N3E	40	398.00	.50	199.00	" "	Oak
"	67-7	" "	55	552.00	.50	276.00	" "	Oak
"	67-8	S.29-19N3E	17	60.00	1.00	60.00	" "	Oak & Aspen
"	68-5	S. 7-19N3E	14	154.26	4.50	694.16	Thin every other row	Norway Pine
INCOMPLETE PERMITS:								
Becker Forest Prod.	67-9	S.32-20N3E	260	.00	5.00	.00	Cut all merchantable	Jack pine
		S.33-20N3E			1.00		trees	Oak
Becker Forest Prod.	68-4	S. 4-18N3E	110	671.00	6.30	9,556.60	" "	Jack pine
		S.5 -18N3E		329.00	1.50			Oak
				58.00	1.00			Aspen
Becker Forest Prod.	68-6	S.31-19N3E		-	6.30	7,242.00	" "	Jack pine
		S.36-19N3E			1.00			Oak
					1.00			Aspen
Becker Forest Prod.	68-7	S.32-19N3E		-	6.30	7,898.60	" "	Jack pine
					1.50			Oak
					1.00			Aspen

Total acreage cut over 622 Total income $30,428.22

No. of units removed B. F. Method of slash disposal lopped 18" maximum height
Cords 2,940.26
Ties

INT.-DUP. SEC., WASH., D.C. 36103

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge	
Necedah	
Proposal Number	Reporting Year
67-1	1967

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/21/67 to 6/22/67	Willow (Salix spp.) Blackberries (Rubus spp.) Oak (Quercus spp.)	Upland east side of Rynearson Pool No. 2	34	2,4,5-T	68 lbs. acid equivalent	2 lbs. acid equivalent per acre	Water 1:5	Portable back pack mist blower
6/23/67 to 7/12/67	"	Both sides Little Yellow River Ditch from Canfield Road to Sprague-Mather Road.	84	"	168 lbs. acid equivalent	"	"	"
7/5/67 to 7/11/67	"	Both sides Sprague and Goose Pool dikes	64	"	128 lbs. acid equivalent	"	"	"

10. Summary of results (continue on reverse side, if necessary)

Cost of Spraying:

18 man days @$11.20/day ------- =	$201.60
91 gal. of 2,4,5-T @$7.39/gal.-	672.49
Transportation - - - - - - - - -	30.00
Mist blower - - - - - - - - - -	18.00
Total cost - - - -	922.09
Cost/acre - - - -	5.07

Most of the spraying was done between 5:00 AM and 10:00 AM. Wind calm to 3 MPH. Temperature range from 45 to 70 degrees. A ground fog was present on many of the mornings and no spraying near crop fields was started until after the fog had lifted. An apparent kill of 60% was achieved.

Old herbicide was used for spraying this year. The herbicide was purchased in 1964 for the APW program and the price was considerably higher than what we can now purchase it for; this is the reason for the cost increase this year as compared to 1966. Two YOC's did the spraying and were paid $1.40/hr.

35500

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Necedah

Proposal Number: 67-2

Reporting Year: 1967

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7/24/67 to 7/26/67	Quackgrass (Aropyron repens) Smartweed (Polygonum spp.)	Corn fields on Upper and middle Canfield Units	26	Atrazine	66 lbs powder	2.5 lbs/acre	Water 18 gal/ acre	Hanson Boom Sprayer

10. Summary of results (continue on reverse side, if necessary)

Application was made between the hours of 8:00 AM and 4:30 PM, clear, 55 to 88 degrees, with wind 5 - 10 mph. The first rainfall after application occured on 8/1/67. The spraying only partially controlled the pest weeds. There was almost no control of quackgrass and only limited control of smartweed. Reasons for this poor kill was the absence of a rain to get the atrazine in the soil and the late time of treatment.

Atrazine cost $151.80, labor $51.30, equipment cost $6.00, total cost $203.10; cost/acre $7.81

35500

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Necedah

Proposal Number: 67-3 and 67-4

Reporting Year: 1967

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May-June 1967	Debarking of Oak (Quercus spp.)	S. 32-20N3E	125	Atlas D Debarking compound with animal repellent 40% sodium arsenite	31.25 gal.	.25 gal/acre	None	Girdle tree and apply w/brush
	"	S. 32 & 33 19N3E S. 4 & 5 18N3E	200	"	50 gal.	.25 gal/acre	"	"

10. Summary of results (continue on reverse side, if necessary)

Application was made between the hours of 6:00 AM and 4:00 PM. The sky was clear to cloudy with the temperature over 40 degrees. The leaves began to wilt 2 days after application and within a month there was a 100% kill. No ill effects to wildlife was noticed after the treatment. The compound used had an animal repellent.

The refuge incurred no cost from this operation.

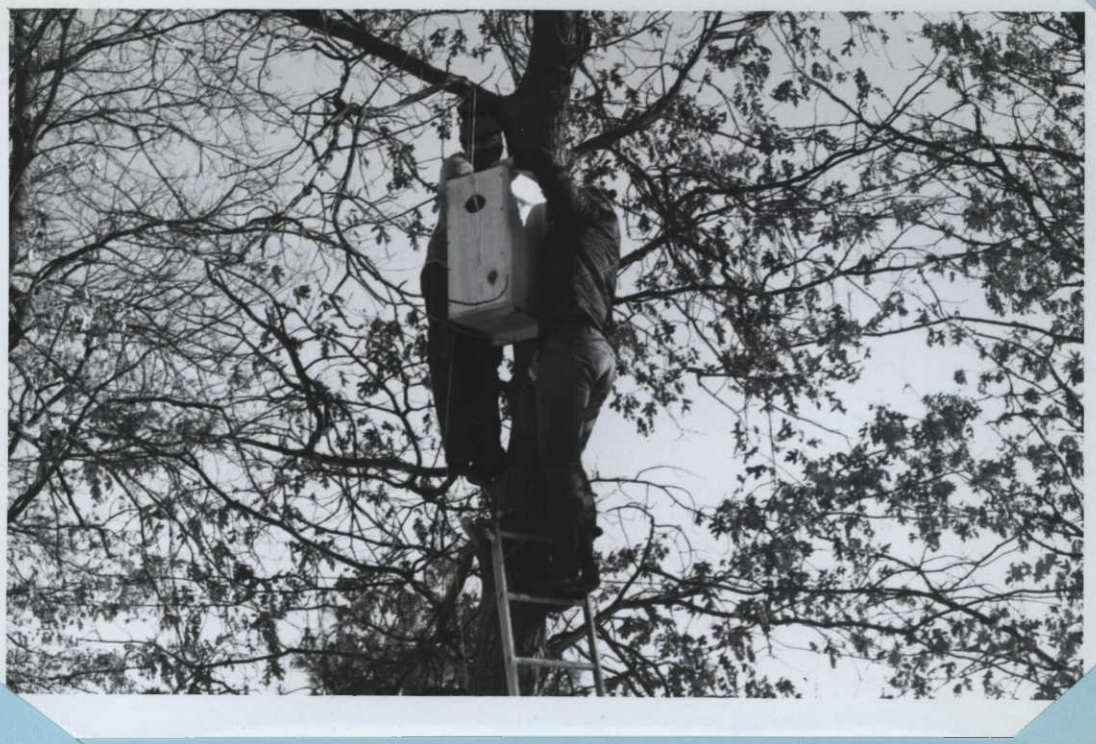
35500

Manager David Brown on right and Clerk Vern Rudolph
R-37, E-1 Lipke

Assistant Manager Howard A. Lipke R-37, E-14 Carter

Harold Carter, Maintenanceman on left and Forester Jim Lennartson.
R-35, E-20 Lipke

Mechanic, Robert W. Arrowsmith R-37, E-4 Lipke



February - Boy Scout Troop of Necedah helped construct and put up 93 wood duck boxes, mainly on 2,500 acre Sprague-Mather Pool. R-22, E-7 Lipke

February - Carter holds fiberglas duck nesting platform with his idea for modification of pipe attachment. This method of placing nest material resulted in no loss of hay. R-23, E-1 Lipke

February - Carter makes adjustments on wire variation of nest platform. 60 platforms were placed on refuge pools, 20 each on Sprague and Rynearson 1. Roll 22, E-2 Lipke

February - Lipke makes final addition of nest material (flax straw) to fiberglas variation of nest platform. There was no use during the first nesting season. Roll 21, E-15 Carter

May - Arrowsmith checks Pool 18 spillway washout. Heavy runoff and an open channel leading back to ditch caused the failure. Roll 27, E-11 Collins

December - Situation was corrected by widening main dike and building a dike along the ditch bank below the control. Water through spillway now flows south into marsh. R-37, E-9 Lipke

March - Timber sale on upland area adjacent to Rynearson Pool 1. Harvest is presently concentrated on pool areas to open up nesting habitat. Roll 23, E-5 Collins

December - Timber removal will be followed with controlled burning to eliminate slash and stimulate grass growth. R-37, E-16 Lipke

Area north of Rynearson Pool 1. This area was logged during the past year and will be burned every three years to improve waterfowl nesting habitat. The water table is quite high and numerous potholes will be developed in this area. Photo taken by regional office.

March - Collins assists WCD personnel net northern pike below Rynearson 2 structure. Fish transplanted to Sprague Pool provided fair catches this summer. Roll 23 E-9 Lipke

May - Lipke places goose nest on fiberglas structure in late stages of incubation. Effort is an attempt to imprint young to the structure. Roll 25 E-9 Renaker

May - Two nests were lifted and both successfully hatched. One was elevated on 12 inch legs to imprint young to height.
Roll 24, E-10 Lipke

May - Six young hatched on this structure hopefully will return to nest on platforms over the marsh. For the 2nd year no use was obtained on 75 structures. Roll 24, E-5 Lipke

June - Nearly 6,000 game farm mallards were banded for releases at Necedah and Lacreek National Wildlife Refuges. Birds were from Frost Game Farm, Coloma, Wisconsin. R-28, E-7 Collins

June - Bureau project was undertaken to learn more about releases of farm reared ducks. One-third were color marked for behavioral study. R-28, E-12 Collins

June - After banding and shipment, crates are distributed to crews for release in marsh. 2,882 four week old birds were put out in three separate releases. Roll 27, E-15 Collins

August - Dr. Dan Trainer and Milt Friend of U. of Wis. take blood sample from release mallard for disease studies. Roll 32, E-16 Collins

September - Of the 290 acres in cropland, 150 acres were in grass and legume seedings. The areas provided limited browse this fall. Roll 32, E-13 Collins

September - Laske alfalfa planting in its second year provided browse for geese and deer. As many as 60 white-tails could be seen at one time. R-34, E-0 Lipke

July - Placement of 6' culvert on north fire trail of Unit 1 - Rynearson No. 1. Fire trails and breaks will completely surround the unit to aid in controlled burning. R-31, E-19 Collins

July - Dragline work on fire trail. Plans include 5 controlled burn units and establishment of 8,000 acres of grassland, mainly around pools. R-30, E-12 Lipke

June - Herbicide spraying with mist blower has been very effective in killing undesirable brush, particularly willows.
R-31, E-5 Collins

An infestation of ips bettles necessitated thinning of this red pine plantation. 151 cords of pulpwood were removed.
Roll 30, E-7 Lipke

July - Dozed pothole on Rynearson No. 2 is one of 65 dug or blasted experimentally. Breeding pair use on better than 40% justifies construction of more. Roll 30, E-4 Lipke

Here's a deer hunter who likes to remind everybody of his past years success. Maybe he'll start a fad. Roll 36, E-11 Lipke

September - Lennartson explains refuge development to a group from the Necedah Bowshoot. 11 refuge tours were conducted.
Roll 33, E-1 Lipke

December - "Fiasco" This 20' observation tower was to be completed by late October. The construction company has made one bungle after another - completion date unknown. R-37, E-20A Lipke

October - Duck and goose use was excellent on Goose Pool. Production of moist soil food plants is the key to increasing waterfowl use.
Roll 34, E-17 Lipke

October - Canada geese in Sprague Pool setting. Goose use of needlerush flats on Sprague was good as the pool attracted 60% of the peak of 9,750. Roll 34, E-7 Lipke

October - Jack Frost, mallard breeder from Coloma, Wisconsin, wing clips drake to be used in propagation of F-2 stock for future mallard releases. R-34, E-12 Lipke

October - In addition to 1900 wild ducks (1500 mallard) trapped this fall, 45 release mallards were caught. Measurements will determine growth and development. Roll 34, E-4 Lipke

December - Increased beaver population has kept staff busy unplugging culverts and pulling beaver dams from structures. Roll 37, E-8 Lipke

December - Carter stands beside newly acquired Studebaker M-45, 6x6, with fire plow behind. The rig carries 400 gallons of water and is equipped with high pressure Beam pump. Roll 36, E-5 Lipke

December - Deer hunters parked along Becker Road for opening of late bow season. 5,000 crammed into Area 3. Roll 36, E-10 Lipke

December - "Exodus at 9:30 AM". With the high density of hunters the hunt is essentially over on the morning of the opening.
Roll 36, E-17 Lipke

December - Wisconsin Conservation Department assist on enforcement during the deer seasons. They are shown here checking licenses. Roll 36, E-18 Lipke

December - Two of 180 successful hunters on opening day. This years harvest for the 3 refuge deer seasons was down considerably, but still over 300. Roll 36, E-20 Lipke